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Investigating the use of Action Research and Activity Theory to Promote the Professional Development of Teachers in Iceland

Submitted by

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Hjördís Þorgeirsdóttir

Signature:

Dedication

I dedicate the thesis to the action research group in Menntaskólinn við Sund

ABSTRACT

This thesis investigates the use of action research and activity theory to promote the professional development of teachers in an Icelandic upper secondary school. The purpose of the research was to develop a new model to foster professional development through enhancing the participants' agency to transform their practice. It was carried out with an action research group of twenty-one school professionals and an outside consultant. The group's aim was to find ways to increase students' sense of responsibility for their studies. The project combined the ideas behind the Change Laboratory, one of the methods of developmental work research established by Engeström and action research as elaborated by McNiff. I termed our approach the Change Room. There activity theory and the theory of expansive learning provided the participants with a conceptual framework, historical analysis and tools to analyse what changes might be appropriate in our classroom practice. The action research provided the participants with the method and tools to guide the participants when carrying out and evaluating these changes. The research focus was on tensions the participants experienced in their classroom practice. Through creative resolutions of these tensions the intention was to develop better practices and contribute to school development. The research used both action research and case study methodology. The research tools were documentary analysis, interviews, surveys, research diary and observations. The findings were analysed using deductive process based on activity theory. The teachers experienced tensions in their classroom practice between students' active and passive learning, didactic and dialogic teaching methods, and the requirement to cover the syllabus and to promote deep learning. To resolve these tensions the teachers have developed teaching practices that enhanced active student learning and given more weight to the students' voices. Participation in the action research group enhanced both individual and collective learning of the school professionals. Their agency to change practice was increased and they also developed more cross curriculum agency. The combination of activity theory and action research in the Change Room provides a new model for enhancing teachers' professional development and collaboration that has potential to transform classroom practice.

ÁGRIP - ABSTRACT IN ICELANDIC

Ritgerðin fjallar um notkun starfendarannsókna og starfsemiskenningar til að efla starfsþróun kennara í íslenskum framhaldsskóla. Markmiðið með rannsókninni var að móta nýja leið fyrir starfsþróun kennara sem veitir þeim kjark og þor til að gera breytingar á starfi sínu. Rannsóknin var gerð með starfendarannsóknarhópi sem í voru tuttugu og einn starfsmaður og ytri ráðgjafi. Markmið hópsins var að finna leiðir til að auka ábyrgð nemenda á námi sínu. Rannsóknin tengdi saman Breytingatilraunastofu, eina af aðferðum vinnuþróunarrannsókna Engestöms og starfendarannsóknir byggðar á hugmyndum Jean McNiff. Aðferðin sem var þróuð nefndi ég Breytingastofu. Þar veittu starfsemiskeningin og kenningin um víkkað nám þátttakendum hugtakaramma, leið til sögulegrar greiningar og verkfæri til að greina hvaða breytingar æskilegt er að gera í kennslu og námi. Starfendarannsóknir veittu þátttakendum aðferð og verkfæri til að prófa og meta þessar breytingar í starfi sínu. Athyglin beindist sérstaklega að togstreitu sem þátttakendur upplifðu í starfinu. Viðbrögðin við togstreitu geta leitt til þess að lausnir finnast sem stuðla að umbótum í starfinu og þróun skólastarfsins. Rannsóknin tengdi saman starfendarannsókn og tilviksrannsókn þar sem skráðum gögnum var safnað og viðtölum, könnun, dagbók og athugunum var beitt við öflun gagna. Greining rannsóknargagna byggðist á afleiðslu út frá hugtakaramma starfsemiskeningarinnar. Togstreita hjá kennurum birtist einkum á milli einstefnu- og tvístefnumiðlunar, á milli yfirferðar námsefnis og dýpri skilnings á efninu og á milli verkfæra sem ýmist gera nemendur að óvirkum eða virkum þátttakendum í náminu. Til þess að leysa þessa togstreitu hafa kennarar gert breytingar á starfi sínu sem beinast fyrst og fremst að því að auka virka þátttöku nemenda í námsferlinu í kennslustofunni og veita röddum nemenda aukið vægi. Þátttaka í starfendarannsóknarhópnum ýtti bæði undir einstaklingsnám og samnám. Í gegnum námsferlið jókst hæfni og þor þátttakenda til breytinga á kennslustarfinu sem og hæfni þeirra og þor til þverfaglegs samstarfs. Breytingastofan þar sem starfsemiskeningin og starfendarannsóknir eru tengdar saman opnar nýja leið til að efla starfsþróun kennara og samstarf sem getur aukið varanlegar breytingar á kennsluháttum.

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ABBREVIATIONS

AR	Action research
AT	Activity theory
CHAT	Cultural historical activity theory
CL	Change Laboratory
CPD	Continuing professional development
CR	Change Room
PL	Professional learning
PLC	Professional learning community
ZPD	Zone of proximal development

PART I: THE BACKGROUND OF THE STUDY

In Part I the aim of the study is introduced and the context and background of the study. In the first half of Part I, the objective of the research is described, I introduce myself and the action research group that is the focus of the research and an overview of the content of the five parts of the thesis is provided. The aim is to provide an understanding of the reasons why that action research is both the methodology and the focus of the research. In the second half of Part I a brief overview is provided of the Icelandic educational system and the upper secondary school in Iceland where I work and do my research, called Sjárvarsíðuskólinn in the thesis. In a case study the context of the research is considered important and necessary to deliberate many different aspects of the context for example historical, political, cultural and social aspects (Stake, 1995; Yin, 2009). The aim here is to give information on the Icelandic context of the research with focus on the aspects of the educational system and development within Sjárvarsíðuskólinn that are directly related to this research. I start by introducing the objective of this research.

1. INTRODUCTION

1.1 How can use of the Change Room enhance teacher's professional development?

The focus of the thesis is on the work of an action research group in Sjárvarsíðuskólinn in Iceland. The overall aim is to enhance Sjárvarsíðuskólinn as a learning community and strengthen action research as a model for the professional development of teachers. My research is a case study of teachers' action research that is embedded in my action research as a deputy head teacher. The aim of my action research is to enhance the teachers' professional development by introducing a new methodology of the Change Room and the aim of the case study is to enhance the understanding of the influence of the action research on the participants.

Action research of practitioners has often been criticised for not being sufficiently conceptual and theoretical (Rhodes, Bateman, & Farr, 2005) but others think it is very important for teachers to use theory in developing their work (McIntyre, 1993). I was interested in investigating action research as a method for teachers' professional development and I wanted to apply theory in that research. When I became familiar with activity theory I saw a great resonance between action research and activity theory. Other theories could be applicable to the research such as Bronfenbrenner's theory of human development within ecological systems (Bronfenbrenner, 1979), or complexity theory where the system view can be useful to understand the interrelations between teachers' professional development and the educational change process (Hoban, 2002). These theories are interesting because they consider both individual and social factors to create a system view of the activity under study. Activity theory was chosen because of its emphasis on historicity which would add a new dimension to action research in Sjárvarsíðuskólinn and how activity theory draws together in a special way historicity, action and agency. Activity theory and action research ground analysis in everyday life and both demand collaboration and active participation of all research participants. I also considered it very important that both action research and activity theory are interventionist and can bring about educational change since agency to change is central in both action research and activity theory.

A new methodology, the Change Room, which combines the second and third generations of activity theory with action research, is used in this research. It is a new model for professional development based on the Change Laboratory, one of the methods of developmental work research established by Yrjö Engeström (2001, 2007b). This new methodology involves the teachers in a process that enhances their professional development with the aim of improving the learning and teaching methods in Sjárvarsíðuskólinn. In addition the study aims to discover whether action research has the potential to facilitate changes at system or school level.

Action research in education is always at the same time personal, professional and political (Carr & Kemmis, 1986). It is political because it deals with questions of

values in education and what kind of society educational changes are intended to bring about inside and outside the school (McNiff & Whitehead, 2006). McNiff has emphasised that it is not enough to criticise when we experience conflict, we need to take one step further to improve the situation. McNiff (2007) calls it “post- critical living consciousness”.

They [practitioners] can do this by systematically interrogating their own values and logics, and checking whether they have crossed the heuristic gap which lies between the critique of identifying what is happening in an unsatisfactory situation and why the situation is as it is, to a post-critical intentionality where they make conscious choices about what they propose to do in order to improve the situation for the wellbeing of all participants, while checking all the time for potential slippages between the intent and their actions. Many people find that they transform their logics from a commitment to critique to a commitment to improvement through dialogue (McNiff, 2007, p. 10).

The aim is not only to understand and criticise our school but also to develop new learning and teaching methods. The aim is to enhance the school as a professional learning community (Stoll & Louis, 2007).

Louise Stoll defines PLC:

A professional learning community is an inclusive group of people, motivated by a shared learning vision, who support and work with each other, finding ways, inside and outside their immediate community, to enquire on their practice and together learn new and better approaches that will enhance all pupils’ learning (Stoll, 2006).

In the next section I present an account of my journey as a teacher and a teacher union activist from 1981 to 2002 and a deputy head-teacher from 2002 to the present day. The aim is to explain my stance and my choice of object for the thesis.

1.2 Professional development – a teacher's story

I have been interested in teachers' professional development since I began teaching sociology in a small secondary school in the north of Iceland in 1981 and I have been working in various ways through my working life towards the aim of enhancing teachers' professional development. For many years I was a member of the board of the Icelandic Society of Sociology Teachers' in Secondary Schools and there I participated in the preparation and running of both short and long summer workshops and a week-long learning study tours abroad. At the same time I also worked within the Icelandic Teachers' Union on enhancing teachers' professional development for example by working towards uniting practitioners of pre-schools, compulsory schools and upper secondary schools into one Icelandic Teachers' Union, creating one professional school policy for all school-levels and creating the Teachers' Code of ethics. The aim was to enhance the professionalism of the teaching profession and increase their professional autonomy. Since I became a deputy head teacher in Sjárvarsíðuskólinn in 2002 I have tried to encourage teacher's professional development and build a learning community within Sjárvarsíðuskólinn for example through self-evaluation, continuing education, mentors for new teachers, school developmental projects and professional work both within curriculum subject departments and cooperation across departments.

I was also for many years a teachers' union representative on the Committee for Continuing Education of Secondary School Teachers that worked with the Institute of Continuing Education of the University of Iceland and various teachers' subject societies at organizing the continuing education of secondary school teachers' in Iceland. In the beginning of the year 2005, Dr. Hafdís Ingvarsdóttir, at the University of Iceland introduced action research to the Committee for Continuing Education of Secondary School Teachers and the committee decided to introduce action research in year-long school-based learning programs. I applied for a grant to the Ministry of Education and established an action research group in Sjárvarsíðuskólinn in the autumn of 2005. With action research I felt I had found a new way for professional development that suited all of us in the action research group: a way that really worked. I felt increased joy at my work and professional

discussions, and experiments with new working methods increased in Sjárvarsíðuskólinn. Before I started my doctoral studies in 2009 I had written three reports about the work of the action research group in Sjárvarsíðuskólinn (2006, 2007, 2008) and an article in “Skólavarðan” published by the Icelandic Teachers Union (2007). It is important for the development of the teaching practice and teachers’ professional development to disseminate information about the process and outcome of the action research projects of individuals and groups in the schools. In this research I explore further the possibilities of action research for professional development and educational change in the classroom. I am aware of both advantages and risk in being a committed action researcher doing an insider action research as will be discussed both in the methodology and discussion sections.

Next I will describe the action research group in Sjárvarsíðuskólinn, which is the focus of this research. I will describe the formation of the action research group in 2005, and its aims and development.

1.3 The action research group in Sjárvarsíðuskólinn

The action research group in Sjárvarsíðuskólinn was formed in the autumn 2005 with eleven members and an outside consultant. It was a part of the self-evaluation program of Sjárvarsíðuskólinn and sought to build a “professional learning community (PLC)” in Sjárvarsíðuskólinn. The aims were:

- To enhance the work of teachers and school-leaders.
- To provide opportunities for teachers to develop their own working methods.
- To provide opportunities for school-leaders to develop their leadership methods.
- To strengthen and develop self-evaluation.
- To follow up student and staff surveys.
- To enhance education in the school.
- To make students’ learning more effective and richer in content.

- To increase students' learning outcome
(Thorgeirsdottir, 2006, p. 4-5).

During the first two years we discussed the theory of social constructionism and learning as a social process (Thorgeirsdottir, 2006, 2007). Our focus was on the learning of the students and the need to increase the responsibility of students for their learning. That became the group's aim and has been since then. Various teaching methods were tried out that emphasised the social aspect of learning, for example different forms of group work and students' discussions and also students' meta-learning or learning how to learn. In the third year a lot of the groups' energy and time was spent to introducing our work to other teachers at the University of Iceland, at teachers' conferences and meetings and at an international conference at St. Mary's University in London. That year the emphasis was also on learning about PEEL (Project for Enhancing Effective Learning) which has been operating in Australia since 1985. We were particularly concerned with creating PEEL teacher stories to put on an Icelandic PEEL web-site which was created by Eygló Sigurðardóttir in 2008 (Thorgeirsdottir, 2008). The teachers' stories have the aim of encouraging teachers to enrich students' learning environments and increase the diversity of classroom practice in order to enhance students' motivation for learning. In the fourth year the focus was on reading and literacy.

I will now outline how the thesis is divided into five parts and describe the contents of each of the five parts.

1.4 Overview of the study

The thesis is divided into five parts: background, literature review, methodology, findings and discussion. The first part describes the aims and the cultural background of the study in the educational system of Iceland. The second part reviews the literature on teachers' professional development, action research and activity theory. It also describes the similarities between activity theory and action research and gives examples of how they can be combined in educational research. The methodology and research methods section describes how the research is set within the interpretive paradigm with a strong influence from the critical paradigm, describes the methodology of action research, a case study and

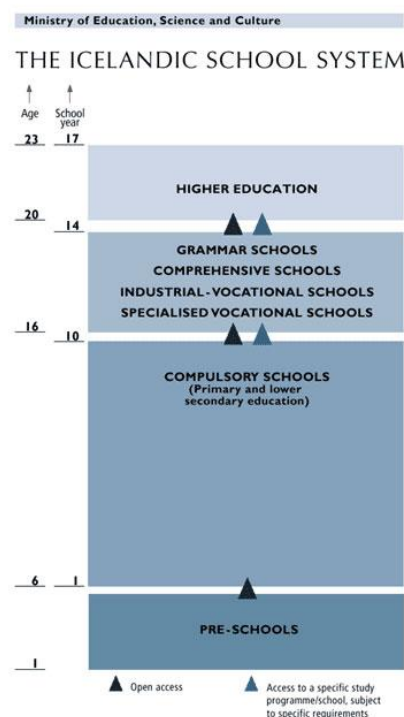
the expansive learning cycle in the Change Room. It evaluates the methods of inquiry, the data analysis and treatment of ethical issues involved in the study. The fourth part illustrates and interprets the findings of the study in the Change Room. Firstly, it gives a description of the participants and the process in the Change Room. Secondly, it shows how the participants experienced the main changes from the past to the present in Sjárvarsíðuskólinn. Thirdly, it describes the processes and outcomes of individual action research projects in the classroom. The final section provides an account of the action research group in the Change Room, the participants' evaluation, their modalities of learning and development of their agency in the Change Room. In the findings chapters the tensions experienced by the participants are described i.e. in the school, in the classroom and in the action research group. It is hoped that resolutions of these tensions may contribute to school development. Part of the discussion on the findings is embedded in the finding chapters to make direct links there to appropriate concepts and ideas from the literature in order to enhance the understanding of the findings. The fifth and final part summarises the outcome of the study at individual and group level and considers the possible impact of the research at system level. I will also explore issues relating to my dual role as a researcher and a deputy head teacher in the school where I conducted an insider action research.

In the next chapter I give a brief history of the secondary school system in Iceland, its basic values, legislation, curriculum and its context within the educational system in Iceland. I discuss the new legislation for secondary schools introduced in 2008, the dispute about the cut from 4 to 3 years of studies for the final matriculation exam and the postponement of the implementation of part of the legislation to 2015 because of dispute and recession. In Sjárvarsíðuskólinn the new school curriculum and a new time table system of eight week periods with emphasis on students' assignments related learning was due to be implemented in the autumn 2010 i.e. in the middle of the study but these changes have not yet been implemented in Sjárvarsíðuskólinn.

2. THE CONTEXT

2.1 The Icelandic secondary school system and new laws in 2008

The Icelandic educational system is divided into four educational levels, pre-school until 6 years of age, compulsory from 6 to 16 years of age, upper-secondary from 16 to 20 years of age and higher education level from 20 years of age, see Figure 2-1. The pre-schools and compulsory schools are run by the local municipalities but the state runs the upper secondary schools and the public universities at the level of higher education.



(Ministry of Education, Science and Culture 2012)

Figure 2-1 The four school levels of the Icelandic educational system.

In June 2008 new laws for all four school levels; pre-schools, compulsory education, upper secondary schools and public universities, were passed at Alþingi, the Icelandic Parliament. One of the major aims was to create a continuum in students' education from 6 years of age and onwards. New laws were also passed for the education and recruitment of teachers and head teachers at the first three school levels (Alþingi, 2008a). Now a master's degree is required for an

individual to be granted a teacher licence by the Ministry of Education, Science and Culture for the first three school levels.

The Upper Secondary School Act from 2008 gave upper secondary schools more independence to create their own curriculum and study programs. The objective was to enable the schools to provide appropriate study-lines for all students and thereby decrease the drop-out rate and increase the number of students finishing studies at this school level with a matriculation exam. The former Minister of Education, Science and Culture pointed out that the aim is to equalize all studies both academic learning and vocational studies and it calls for reevaluation of all subjects at this school level (Jakobsdóttir, 2009).

The aim was also to enable students to enter university one year earlier. In order to realise that goal a part of the curriculum now undertaken in the upper secondary school will be moved down to compulsory school level, the school year will be lengthened and the division between teaching and assessment periods within the school-year will be abolished i.e. it will be optional for schools to have a special period for exams.

The new laws from 2008 (Alþingi, 2008) and the general section of the National Curriculum Guide for upper secondary schools from 2011 put new emphasis on student competence where competence is based on knowledge, skills, morals, emotions, social ability and initiative (Mennta- og menningarmálaráðuneytið (The Ministry of Education, Science and Culture 2012). This new emphasis on competence is based on a curriculum theory developed in the 20th century in the USA, the so-called objectives model based on the ideas of Bobbitt, Taylor, Bloom and Taba (Harðarson, 2012, 2013). This implies a shift in emphasis in school curriculum in Iceland from delivering subject knowledge to learner-centred objectives, but this development is in line with the European educational policy (Jónsdóttir, 2011), the Bologna Agreement and the emphasis on “outcomes based education” in the educational policy of some countries (Harðarson, 2012).

To acquire permission to enter studies at higher education level students need to graduate with a matriculation examination from an upper secondary school. The

law does not specify the number of credits students need for that examination. In the school-year 2009-2010 two upper secondary schools started working according to their new school curriculum that is based on the new laws. They have study programs for 200 credits in 3 years that has been validated by the Minister of Education, Science and Culture (Jakobsdóttir, 2009). Now four more secondary schools have implemented the new curriculum and the rest of the schools are expected to do so in the school-year 2015 - 2016.

In 2010 the government decided to postpone bringing into force the main parts of the new Upper Secondary School Act until 1st of August 2015. This was done because of the recession demanding financial cuts at all school levels and no extra funding available for developmental work and a new contract of pay with the Icelandic Teachers Union. The Icelandic Teachers Union also put a pressure on the government to postpone the enforcement of the new laws (Thorisdottir, 2010).

I will now give a very brief view of Sjárvarsíðuskólinn, explain its values and place within the secondary educational system in Iceland.

2.2 Sjárvarsíðuskólinn

Sjárvarsíðuskólinn is a traditional upper secondary school situated in Reykjavík, the capital city of Iceland. It was established in 1969 when there were only four secondary schools in the greater capital area of Reykjavík whereas now there are a total of sixteen secondary schools in that area. Sjárvarsíðuskólinn has the main aim of preparing students for further education at university level but it also aims to prepare the students for active participation in life and work in society. The school's main values are respect, equality, responsibility and honesty. Its aim is to foster the initiative of both students and staff and it puts emphasis on varied teaching methods, the use of information technology in teaching and the continuous education of staff members.

Sjárvarsíðuskólinn is organised as a selective academic school and it is equivalent to a sixth form in England for 16 to 18 years old students preparing for Advanced level examinations. Sjárvarsíðuskólinn has a traditional class based system, which means that the students in the same class are together in lessons in most subjects.

Each year, the studies are organised into two semesters, autumn and spring semester, but the students need to fulfil requirements of the whole school-year to be able to continue their studies at the next study-year, otherwise they need to repeat the whole year of studies.

Students who began in 2010 or later could choose between two academic programmes, social sciences and natural sciences but before that they could choose between three academic programmes, those mentioned above and also a language sciences program. The studies are organized as four year studies for a matriculation exam. Each subject has a final exam that can be an overview exam of learning material from more than one year. The outcome of the final exam and the semester grade in each subject appears on the final matriculation certificate but no other grades. Continuous assessment can replace the final exam, for example in sports and elective subjects.

There are around 750 students, their age ranging from 16 to 20 years with about equal numbers of girls and boys. It employs 65 staff members; 54 teachers, 3 school-leaders, 2 students' counsellors and 6 other personnel. The basic units are the 15 subject departments that organise the teaching, the teaching material and semester plan in each subject. In each subject department there is a head of department, who directs departmental meetings and allocates the work in collaboration with the teachers. There are also two professional leaders, one in humanities and social studies and the other in the natural sciences.

In 2010 Sjárvarsíðuskólinn decided to implement a new system to replace the traditional class based system and was developing a new school curriculum. Neither was implemented in 2010 as planned and that is explained in more detail in Appendix 1 as well as its influence on the action research group in the Change Room.

I will next describe the threefold focus of the literature review and the purpose of each of them. Teachers' professional development is the focus of my study. Action research is both part of the methodology of my research and the focus or object of my research i.e. the action research of participants in the Change Room. Activity

theory is both a part of my methodology in the Change Room (the expansive learning cycle and the method of double stimulation) and the theoretical background as my conceptual framework is the activity system.

PART II: LITERATURE REVIEW AND THEORETICAL BACKGROUND

3. TEACHERS' PROFESSIONAL DEVELOPMENT

3.1 Definition and categories

Guskey defines professional development of teachers as:

those processes and activities designed to enhance the professional knowledge, skills, and attitudes of educators so that they might, in turn, improve the learning of students (Guskey, 2000, p. 16).

In contrast Glatthorn refers to professional development as being:

the professional growth a teacher achieves as a result of gaining increased experience and examining his or her teaching systematically (Glatthorn, 1995, p. 41 as cited in Villegas-Reimers, 2003, p. 11).

Both of these definitions are valuable because they are different, broad, include both formal and informal experiences of teachers' learning, and they draw attention to different educational values. Guskey's definition points to the ultimate aim of the teaching profession i.e. to enhance student's learning. Glatthorn's definition on the other hand directs the attention to the teachers themselves and the process of their learning. The latter definition is more appropriate for this research which focuses on teachers' learning process in the Change Room, a new model for professional development, where action research and activity theory are connected together.

Guskey (2000) identifies seven main models of professional development: training, observation, involvement in the development process, study groups, action research, individually guided activities and mentoring. In an international review of the literature on teachers' professional development, Villegas-Reimers identifies sixteen different types of model for the professional development for small groups or individuals: supervision, students' performance assessment, workshops, case-based study, self-directed development, co-operation, observation of excellent

practice, new roles, skill-development, reflective practice, projects, portfolios, action research, narratives, cascades, and mentoring (Villegas-Reimers, 2003).

Aubusson, Ewing and Hoban (2009) divided teachers professional development into three categories: professional development programs, continuous professional development (CPD) and professional learning (PL). Professional development programs usually are “one-off training events” that last from an hour to one day and are organised by the school or school authorities to introduce new knowledge, ideas, techniques or a product. Continuous professional development (CPD) may last from a few days to up to a year or more, and is usually undertaken outside the school, for example in the form of work-shops, conferences or formal courses at universities. Professional learning is a long term learning process through various learning opportunities in the workplace. The category of professional learning differs from the other two categories in that the teachers themselves take responsibility for the aims, content and process of their professional development instead of the school or other educational authorities. The emphasis in the past has been on the first two categories where the outcome has been the acquisition of technical skills and the reinforcement of existing practice rather than fundamental changes in classroom practice (Aubusson, et al., 2009; Cranton, 1996). One can note this emphasis in the ordinary language as professional development is defined in the dictionary as “the advancement of skills or expertise to succeed in a particular profession, esp. through continued education” and the example given is “they got a day off when the teachers had a professional development day” (Dictionary.com, 2012). This kind of model of professional development has been strongly criticised by both educational researchers and practitioners and this criticism is further addressed in the next section.

3.2 Criticism of traditional models of teachers' professional development

A common thread can be found in the criticism on traditional models of professional development of both researchers and practitioners i.e. it has not been successful in bringing about changes in classroom practice (Cranton, 1996; Fullan, 1995, 2007; Guskey, 2000; Hargreaves, 1995; Pedder & Opfer, 2010; Villegas-Reimers, 2003; Webster-Wright, 2009). The main arguments centre on four issues,

the first of which is whether professional development should be a short or a long term process, secondly whether it should be formal and take place outside work or informal in the workplace, thirdly whether the learning process should be individual or collective and fourthly whether the main task is to implement knowledge created by professionals in universities or if teachers should be creating or co-constructing their own knowledge in schools. These four issues will now be addressed in more detail.

Firstly, teachers' professional development has been criticised for being too short in duration and fragmented and thus unconnected to the needs of individual teachers and unable to provide the support necessary to sustain teachers' learning following the continuous professional development (CPD) programme (Aubusson, et al., 2009; Forde, McMahon, McPhee, & Patrick, 2006; Pedder & Opfer, 2010; Peters, 2004; Savoie-Zajc & Descamps-Bednarz, 2007; Villegas-Reimers, 2003). Some researchers have indicated that it takes teachers three to five years to implement lasting changes in their classroom practice and that more time spent on CPD is more likely to lead to improvements (Hunzicker, 2010). However it has also been argued that short CPD programmes can have a long-term impact on teachers changing their practice if certain conditions are met (Lydon & King, 2009). Some believe that the short CPD programs are most likely to have positive effects if the method and content are valued and if teachers have an opportunity to try it out in practice soon after the programme is provided (Hodkinson & Hodkinson, 2005). Others maintain that a year long CPD programme has much more influence than a CDP program that lasts only for a few hours (Darling-Hammond, Chung Wei, Andree, Richardson, & Orphanos, 2009). Some authors argue that it is important to regard CPD as a lifelong process (Villegas-Reimers, 2003).

Secondly, teachers' professional development has been criticised for being external to the school and not situated in school practice (Cranton, 1996; Fullan, 1995; Tripp, 2004, as cited in Hardy & Rönnerman, 2011; Webster-Wright, 2009). Ball and Cohen (1999) explain that although teachers can learn their teaching subjects and pedagogy in formal courses at universities, they need to learn how to use that practical knowledge in their teaching in practice because such knowledge

is bound to be situated and must be learned in and through practice. They also point out that CPD in workshops outside schools is often superficial and “disconnected from deep issues of curriculum and learning” (Ball & Cohen, 1999, p. 5). Guskey (2000) denoted that school based CPD is more likely to have relevance to the teachers classroom reality. Fullan (1995) explained how CPD involves teachers’ learning that cannot be separated from their day to day teaching practice and that teachers needed to learn on a continuous basis by setting personal aims, inquire, create and collaborate within their school to engage in successful CPD. Educational researchers in Iceland have also emphasised the situated nature of teachers’ professional development and stressed that the most effective approach for continuing education is field based learning in schools (Ingvarsdóttir, 2001).

Thirdly, teachers’ professional development has been criticised for putting too much emphasis on CPD as an individual process rather than a collective process (Cranton, 1996; Fullan, 1995; Hargreaves, 1995; Hodkinson, 2009; Villegas-Reimers, 2003). Hargreaves (1995) demonstrates how his and other research has shown the positive effects of teachers’ collaboration on their professional development for example on their risk taking, dealing with external pressure and how it provides more learning opportunities. New research supports this (Bevins, Jordan, & Perry, 2011) although there are critical voices, such as Wilson and Berne ((1999) as cited in McCormick, 2010) who argue that the claims for success in this regard build more on beliefs than facts. Hodkinson (2009) stressed that teachers learning in collaboration with colleagues should be provided as an opportunity but not as a compulsory measure. According to some surveys teachers themselves view collaboration with colleagues as most important to their CPD (Wermke, 2011). Vygotsky’s theory of learning as a socio-cultural process has had an increasing impact and drawn attention to the collective nature of CPD (Webster-Wright, 2009).

Fourthly, teachers’ professional development has been criticised for emphasising the acquisition or deliverance model of teaching rather than providing opportunities for teachers to create their own knowledge (Sachs and Logan, 1990, as cited in

Aubusson, et al., 2009; Kincheloe, 2003; Posch, 1996). Traditional CPD has emphasised the acquisition of new knowledge or skills, for example the use of computers and short term measurable targets (Hodkinson & Hodkinson, 2005) and new knowledge in the subject and new instructional techniques (Smylie, 1995). Traditional CPD does not encourage teachers to engage in professional learning involving reflective practice, action learning, action research or inquiry into their own thinking about their practice. But the new emphasis on collective creative learning in the classroom is calling for teachers' reflection and inquiry into practice because teachers are facing new challenging situations (Aubusson, et al., 2009; Posch, 1996). The role of the teacher in the classroom changes with the shift in emphasis from teaching to learning, from being a provider of knowledge to being a facilitator and a consultant (Forde, et al., 2006; Posch, 1996). Some would also describe the teacher as a learner and a co-constructor of knowledge with the students (Poekert, 2011). This is consistent with social constructionism that assumes that knowledge is constructed through social activity and people learn and develop their understanding through this process. All individuals are active creative agents and all reality is socially constructed. The social construction goes both ways i.e. individuals actively create society and individuals are also a social construction, created through interactions with society (Crotty, 1998).

3.3 Teachers' professional development and educational change

In spite of the apparent consensus among educational researchers from all over the world about the inadequacy of the provision of traditional CPD as described above and research in the field during the last decades there is little evidence of much change in CPD practice according to Fullan (2007) and Webster-Wright (2009). Furthermore, attempts to make sustainable school changes at system level or at classroom level have not been very successful in the past (Engeström, 2008a). Engeström maintains that there are huge constraints for practitioners' social learning in schools which prevents real changes or transformation in classroom practice. The constraints are built into the cultural organisation of the schools through teachers' autonomous classroom practice, students' term and daily time table and the grading system as the main motive for school work (Engeström, 2005, 2008a). Giles and Hargreaves (2006) also point at the structure

of secondary school as resisting change for example the age grades and the subject based organisation of instruction.

The literature discussed in this chapter underlines the importance of teachers' professional development as a long term, school based, collective learning process with emphasis on teachers as authentic learners and creators of their own practical knowledge. Fullan (2006) considers teachers' motivation the key to change and argues that in order to motivate the teachers it is important to build into the school's culture and communication within the school "the right blend of tightness and looseness" (Fullan, 2006, p. 37).

The answer has to be deep engagement with other colleagues and with mentors in exploring, refining, and improving their practice as well as setting up an environment in which this not only can happen but is encouraged, rewarded, and pressed to happen (Fullan, 2006, p. 57).

The methods to encourage teachers to improve their practice must be based on collective strategies and they must be action oriented (Fullan, 2006; Hargreaves & Fullan, 2012). The efforts to reform schools and encourage educational change should be directed at enhancing the teachers' professional capital that is based on human, social and decisional capital (Hargreaves & Fullan, 2012).

Therefore in order to facilitate teachers' professional development and education change we must direct our attention towards creating conditions for long term situated professional learning, both teachers' individual and collaborative learning. We need to view professional development as a holistic experience through an authentic learning process (Webster-Wright, 2009).

3.4 Teachers' individual and collective learning

Lave and Wenger (1991) argue for situated learning and learning as an integral part of all social practices. They describe learning as "legitimate peripheral participation" or as inclusive full participation where people feel belonging to the social practice they are part of. Learning takes place through interaction within practice; "new-comers" gradually become "old-timers" within practice.

It crucially involves participation as a way of learning - of both absorbing and being absorbed in - the “culture of practice”. An extended period of legitimate peripheral participation provides learners with opportunities to make the culture of practice theirs (Lave & Wenger, 1991, p. 95).

The participation learning process requires access to various recourses and opportunities within the practice that involve for example the creation of contacts in the community, interactions, use of tools and discussions. Learning in this sense involves much more than acquisition of new knowledge, it involves the construction of a person’s identity and even if the construction is an ongoing social process it is also relatively stable i.e. “the way a person understands and views himself, and is viewed by others, a perception of self that is fairly constant” (Lave & Wenger, 1991, p. 80). Learning is viewed as the process of participation in the community, both engaging in and contributing to the practice that leads the person to become a full participant in the “community of practice”.

A community of practice is a set of relations among persons, activity, and world, over time and in relation with other tangential and overlapping communities of practice. A community of practice is an intrinsic condition for the existence of knowledge, not least because it provides the interpretive support necessary for making sense of its heritage (Lave & Wenger, 1991, p. 98).

Wenger (1998) lists fourteen factors that indicate the creation of communities of practice. These indicators are for example long term interrelations, shared working methods, tools, discourse and jokes and certain ways to show or verify membership (Wenger, 1998). According to Wenger communities of practices have three properties: “mutual engagement”, “a joint enterprise” and “a shared repertoire”. In the community of practice, people define their practice and negotiate a shared meaning of their actions within the practice and over time they create various resources or tools for doing that for example words, stories, concepts and perhaps most importantly shared histories of engagement in the practice (Wenger, 1998). If certain conditions are met communities of practices can become learning

communities and enhance the participants' creation of new knowledge. There needs to be "a strong bond of communal competence along with a deep respect for the particularity of experience" (Wenger, 1998, p. 214). Fullan (2007) also maintains that educational change is based on personal development in a social context. This is consistent with a development of person's identity described above and the level of change is dependent on how much the teachers interact with each other i.e. a collaborative culture or the development of communities of practice is a prerequisite of educational change (Fullan, 2007). Smylie (1995) argues similarly that if teachers are to change their practice in a significant way they need to change their values and perception of classroom practice or their "theories of action". In order to be able to change their professional identity teachers' professional learning also needs to involve collaborative construction.

Hodkinson and Hodkinson (2005, p. 111) suggest that "to maximize possibilities for improving teachers' learning in the future" professional learning should both involve collaborative construction and participation. Hodkinson and Hodkinson (2005) want to connect together the emphasis put on participation in activity systems in workplace learning (based on Engeström), communities of practice (based on Lave & Wenger) and the emphasis on teacher development literature on learning as personal construction. They argue for the provision of "wide-ranging and diverse opportunities to learn, in a culture that values and supports learning" (Hodkinson & Hodkinson, 2005, p. 123).

Similarly H. Guðjónsson (2012) argued that it is valuable to connect together constructionism and the situated view of learning in teacher education. Constructionism sees learners as creators of their own knowledge and understanding. The situated view looks at learning as changing with others through a social process and participation (H. Guðjónsson, 2012). He considers both aspects important, constructionism because it respects the ideas and thinking of teachers and students and the situated view because it directs attention not only to the content of learning but also to the working processes of collaboration and dialogue which emphasises the school as a cultural institution and learning through sharing that culture (H. Guðjónsson, 2012).

Therefore one can conclude that teachers' professional learning needs to be both at individual or personal level to enhance changes in teacher's identity and at collective level to enhance the development of communities of practice for system change.

3.5 Professional learning, action research and activity theory

The focus on teachers' professional learning, collaboration and inquiry within their schools calls for tools such as action research, action learning and collaborative learning with colleagues (Fullan, 2007; Roberts & Pruitt, 2003; Stoll, Bolam, McMahon, Wallace, & Thomas, 2006). It is important to create a space and a feeling of security for teachers to question their own knowledge and practice and opportunities for conversations with colleagues about these tensions and new ideas for possible changes in classroom practice. Somekh and Zeichner's analysis of 46 action research publications from the last decade revealed that professional development through action research has been used as a successful strategy for educational reform because it combines action with research and thereby gives the participants "a means to develop agency" to improve practice (2009, p. 19). Other literature also indicates that action research often leads to changes in classroom practice (Bartlett & Burton, 2006; Kincheloe, 2003; Noffke & Somekh, 2009; Somekh & Noffke, 2009).

There is uncertainty about whether action research leads to changes at system level. It is necessary to view teachers' professional development and school development as a whole, as interconnected. Edwards (2000) suggested using activity theory as an analytical tool to investigate ways in which action research can transform practice at system level. Edwards argues that activity theory can open up possibilities in action research for system change:

SCRAT [Sociocultural Research and Activity Theory] can, however, illuminate the path that some versions of action research are following and may, at times, throw a little light on the opportunities in action research for more wide-ranging explorations of informed action and institutional change (Edwards, 2000, p. 202).

Connecting action research and activity theory could enhance teachers' professional development in the direction of critically questioning their current methods in practice in order to transform their understanding and develop their professional identity. Ellis (2011) considers Cultural historical activity theory to have advantages over action research because CHAT actively seeks historical understanding of how practices have been shaped and has conceptual and learning tools to understand and transform practice. In this study it will be explored if action research and activity theory can be connected in a productive way to enhance teachers' professional development which enables them to make changes in their classroom practice and influence changes at system level in Sjávarsíðuskólinn.

For the remainder of the literature review the focus will be on action research and activity theory. First action research and activity theory will be discussed separately and then together to reveal their similarities and how they have been connected together in educational research. In the next section of the literature review I will discuss action research, its roots, its history and how it is viewed today. I will then give account of the history of action research in Iceland and finally discuss the strengths and limitations of action research. I will start by outlining the three phases of action research through history.

4. ACTION RESEARCH

4.1 History of action research

Action research has its origins in USA in the 1940s. Kurt Lewin is generally considered the founding father of action research. He was a social psychologist and the first one to use the term action research in his paper “Action research and minority problems” written in 1946 (Kemmis, 2007, p. 168). Lewin described action research as a cycle of planning, acting, observing and reflecting (McNiff, 1988). He argued for the coalition of theory and practice as one of his most famous sentence indicated “Nothing is as practical as a good theory” (Greenwood & Levin, 1998, p. 17). He was also influential in developing theories of group dynamics and social change. Lewin worked within the scientific paradigm and advocated the use of field experiments alongside surveys but he also emphasised the role of social science in initiating changes in social practices (Lewin, 1948). He saw the role of social science as being to study general laws of human relations but also to study special situations. It was for the latter he considered action research necessary on the grounds that it has to be done locally and that no general laws can prescribe the strategy for change (Lewin, 1948). He saw advantages in the cooperation of social researchers and practitioners with externally decided problems, and saw group work within workplaces as increasing the likelihood of successful permanent changes in work practice (Lewin, 1948).

Some want to go further back to find the roots of action research. McKernan (1996) traces it to the Science of Education movement and Dewey. Reason and Bradbury (2006) on the other hand point to Marxism and the work of Freire as the basis for action research. There was a great interest in action research for curriculum development in USA in the post war period where the work of Corey and Taba was influential but the interest declined at the end of 1950s and after that the gap between educational research and teaching practice widened (Holly, 1991).

The second phase in the history of action research began in the UK in the 1960s with the teacher as researcher movement advocated by Lawrence Stenhouse

(Holly, 1991). Stenhouse (1975) maintained that effective curriculum development depended upon the teachers' capacity to inquire into their practice in a critical and systematic way. Stenhouse saw each classroom as a laboratory and the teacher in a crucial role as a researcher with the aim of improving their practice. Stenhouse (1975, 1981) also emphasised that teachers should explain to their students the role of the teacher as a researcher of his practice, the development of a common vocabulary of educational concepts and theory and that teachers should report their work. He explained how teachers and academic researchers should work together i.e. research should be done with teachers but not on teachers and that research was educational only if it could be related to educational practice (Stenhouse, 1981). Stenhouse (1975) saw reflexivity through action research as the key to school development that should be reflected in each school's in-service training programme.

The idea of research-based teaching emerged within the context of the development of a "process model" of curriculum development in the Schools Council Humanities Project replacing the "objectivist model" that had been dominant (Elliott, 1991, p. 27). The principles in the process model valued procedure rather than outcome and expression of different opinions through discussion (Elliott, 1991). This called for changes in the teachers' role from an authoritarian to a more interactive role. Many educationalists who worked with Stenhouse became influential in promoting action research in the UK (McNiff, 1988) and one of the pioneers was John Elliott.

According to Elliott it is important that action research resolves the theory-practice conflict and it is clear that the fundamental aim of action research is the improvement of practice rather than the production of knowledge (Elliott, 1991). Elliott (1991) also stressed as a necessary precondition of action research that the teachers felt a need to initiate change in their practice. In Elliott's view action research combines teaching, research, evaluation, improvements of teaching and professional development. Elliott emphasised action research as qualitative research using methods such as diaries, documents, photographs, videos, interviews and observations. In his view quantitative methods should be used as

“follow up techniques” (Elliott, 1991, p. 82). Elliott was the founder of the Collaborative Action Research Network (CARN) in 1976 and a founding editor of the international journal Educational Action Research in 1993.

The third phase of development of action research was a shift from an interpretive stance towards a formation of a concept of critical educational science by Carr and Kemmis in Australia that is based on the social theories of Habermas. In their work “Becoming Critical” published in 1986 they criticised positivism for maintaining the illusion of value free social science, for being technical, focusing on educational means rather than ends and viewing the object of action research as external that it cannot be because the teachers create the objects in their classroom practice (Carr & Kemmis, 1986). Carr and Kemmis (1986) criticised interpretivism for assuming that transformation of teachers consciousness would be sufficient for making changes and failing to take account of the influence of the external conditions which distort and constrain their understanding of reality. They proposed that action research should be grounded on critical or emancipatory educational science. The aim is the transformation of education in a democratic, participatory and collaborative research process where theory and practice are dialectically related in critical analysis (Carr & Kemmis, 1986). Emphasis is on the social and historical context of practice and it is considered necessary to identify the historical processes which have caused subjective meanings to become systematically distorted (Carr & Kemmis, 1986). I consider it valuable to look at how historical processes cause a gap between individuals’ values and classroom practice but I do not think that it is possible for a researcher to decide which interpretations are distorted because there is no single absolute truth to be discovered and therefore it must be problematic to judge one interpretation as distorted and another one not. Carr and Kemmis have recently discussed how action research is always at the same time personal, professional and political. It is political as it unavoidably addresses questions about the kind of society educational transformation should aim to foster and create (Carr & Kemmis, 2009). In my view this also applies to interpretation of historical situations, it is based on the individual’s values about society and educational practice.

At a similar time Jack Whitehead was developing his ideas about action research in Bath in England that placed individual teachers at the centre of their own research and knowledge creation (McNiff, 2008). His ideas were partly based on the writings of Habermas and grounded in critical theory. His ideas developed into what is termed as the living theory approach that is about doing action research by creating a living educational theory from questions like: “How do I improve my practice”? The starting point of action research is when the practitioners experience themselves as living contradictions because their values are inconsistent with their practice (Whitehead, 1989). Living theories are different from traditional theories as Whitehead explained:

In propositional theories, explanations for the actions and learning of individuals *are derived from conceptual abstractions* of relations between propositions. In living theories *individuals generate their own explanations* of their educational influences in their own learning. The explanatory principles in living theory explanations are energy-flowing values embodied and expressed in practice (Whitehead, 2009, p. 87.

The authors italics).

This approach is also based on the theory of McNiff about the nature of action research as “a generative evolutionary process” (McNiff & Whitehead, 2002, p. 56) and Whitehead has pointed out that McNiff has been the most influential action researcher in communicating the approach of the living theory (Whitehead, 2009).

Next I will outline the position of action research today and the link between action research and teachers’ professional development.

4.2 Action research today

It is now recognised that action research based on positivism, interpretivism and critical theory can coexist in educational practice (Dick, 2004; Kemmis, 2006). The theories about action research have changed over the years; both the ideas of the pioneers and many new influential voices have emerged on both sides of the Atlantic and in Australia.

Elliott (2009) has recontextualised the use of the term theory in action research since he made the distinction between educational research and research on

education. Earlier he distinguished between theorising of the scientist and the practitioner and saw the latter as a theory of common sense. But Elliott no longer wants to make that distinction and now sees all theory as a way to make progress. He views educational research as a process that is grounded in “phronesis” or situational understanding based on an ethical standpoint (Elliott, 2009, p. 31). Elliott (2009) argues that teachers are able to create a common tradition of understandings through action research based on particular situations because the practically relevant features of individual situations will repeat themselves across different contexts.

Kemmis has outlined how changes in the critical theory have involved a move from viewing the whole system as the subject of theory to viewing it rather as interconnected networks of social relations where the truth is located in discourses:

There are just interwoven, interlocking, overlapping networks of social relations which galvanize power and discourse in different directions and in different ways in relation to the personal, the social and the cultural realm (Kemmis, 2006, p. 103).

Kemmis (2006) no longer sees action research as a “social macro-subject” but rather as creating a “communicative space” where people can come together to discuss issues but the groups conclusions are not binding for all participants. The central emphasis is still on action research as a form of educational research which places the control over the processes of educational reform in the hands of those involved in the action (Kemmis, 2007).

Educational action research has been thriving during the last decade. Between the publication of the two major handbooks on action research in 2001 (Reason & Bradbury, 2001) and in 2009 (Noffke & Somekh, 2009) many books on action research have been published that are especially valuable in the educational field (Altrichter, Feldman, Posch, & Somekh, 2008; Coghlan & Brannick, 2001; Day, Elliott, Somekh, & Winter, 2002; Hopkins, 2008; McNiff, 2010; McNiff, Lomax, & Whitehead, 2003; McNiff & Whitehead, 2006, 2009b; Norton, 2009; Pine, 2009; Somekh, 2006; Whitehead & McNiff, 2006). Some refereed journals are published;

Action Research, Educational Action Research, Systematic Practice and Action Research and Reflective Practice. A number of on-line journals are now available; Learning: Research and Practice, Participatory Learning and Action, Action Research e-Reports, CARN, AR Expeditions, Action Research International and Educational Journal of Living Theories.

There are different views on action research today. Some advocate it for professional development, some for knowledge creation but all stress it should result in improvement of practice. People disagree about whether it is a special research paradigm (Pine, 2009), a methodology of research (Noffke & Somekh, 2009), or an orientation towards research (Reason & McArdle, 2003 as cited in Ladkin, 2004).

Probably the two most widely cited definitions of action research come from John Elliott and Carr and Kemmis:

Action-research might be defined as *“the Study of a social situation with a view to improving the quality of action within it”*. It aims to feed practical judgement in concrete situations, and the validity of the “theories” or hypotheses it generates depends not so much on “scientific” tests of truth, as on their usefulness in helping people to act more intelligently and skilfully. In action research “theories” are not validated independently and then applied to practice. They are validated through practice (Elliott, 1991, p. 69. The author’s italics).

Action research is simply a form of self-reflective enquiry undertaken by participants in social situations in order to improve the rationality and justice of their own practices, their understanding of these practices, and the situations in which the practices are carried out. (Carr & Kemmis, 1986, p. 162).

A third definition is offered by Feldman and he relies on Stenhouse’s emphasis on research made public:

Action research happens when people are involved in researching their own practice in order to improve it and to come to a better understanding of their practice situations. It is action because they act within the systems that they are trying to improve and understand. It is research because it is systematic, critical inquiry made public (Feldman, 2007, as cited in Altrichter, et al., 2008, p. 6).

I consider all these definitions useful as they all point out a valuable aspect of action research. Elliott points out the core; its aim is to improve actions within a practice. Carr and Kemmis add that it should also improve social justice. From Stenhouse comes the request of making the findings public and that is essential for all research.

Next I will describe the development of action research in Iceland and especially the growth of it in the last few years. The main purpose of this overview of action research in Iceland is to place my research within an Icelandic perspective.

4.3 Action research in Iceland

John Elliott gave a course on action research at the University of Education in Reykjavík, Iceland in the 1980s and inspired many teachers at that time (Einarsdóttir, 2009). However, action research did not gain momentum in Iceland until the beginning of this century although a few action research group projects were carried out in compulsory- and pre-schools in Iceland in the 1990s.

In 1993 Guðjónsdóttir finished a master's degree based on action research about her experience as a school teacher at the compulsory school level. Since then a number of people in Iceland have carried out their master's research based on the methodology of action research and at least three people have finished their doctoral research in this field.

In 2005 an action research group was founded in Sjárvarsíðuskólinn. This was probably the first action research group at the secondary school level in Iceland. In the same year McNiff introduced action research in the year-long work-based continuing educational programs for secondary school teachers at the Institute of Continuing education at University of Iceland.

In 2008 the Society of Action Research in Iceland was established in Reykjavík with 96 initial members. The aim of the Society is to disseminate the idea of action research among Icelandic teachers, thus enhancing school development (Félag um starfendarannsóknir (The Society of Action Research), 2008). The founding of the Society took place in connection with the first conference dedicated to action research projects in Iceland held by the Association for School Development in Iceland. Since then the Society of Action Research has held three conferences on action research in 2010, 2012 and 2014 for teachers at all school-levels.

In 2009 a course on action research was established in the teacher education graduate program at the University of Iceland and it has been repeated every year since then. Action research is gaining impetus at the University of Iceland, reflected in action research gaining status as an alternative methodological course at master's level alongside qualitative and quantitative research and by an increasing number of masters dissertations based on this approach, (H. Guðjónsson, 2011a, 2011c, 2013). One more sign of the growth of the action research community was the founding of the Research Institute of Action Research at the University of Iceland in 2013.

McNiff has placed great emphasis on teachers introducing their action research to other practitioners. Following that advice some teachers involved in action research projects in secondary schools have presented the idea and their work at conferences and meetings and others have written articles about their projects in various teachers journals in Iceland (Guðmundsdóttir, 2009; Halldórsson, 2007; Jónsson, 2008; H. Kjartansdóttir, 2010b; Knútsdóttir, 2008; Rasmussen, 2008; Thorgeirsdóttir, 2007, 2010b; Torfadóttir & Ingvarsdóttir, 2008). The research objects of these projects are very varied but a common aim is to enhance students' autonomy and competence. These aims can also be identified in action research projects in UK (Blanchard, 2008; Haggarty & Postlethwaite, 2002; Somekh, 2006). The main difference between the two countries in this regard seems to be the ownership of research. The projects are more often on individual bases and more in the hands of the teachers themselves in Iceland than in the UK. Here we see the influence McNiff has had on action research in Iceland. An outside consultant plays

a very important role in the action research groups in Iceland by providing teachers with pedagogical and professional support, as will be discussed later in this thesis but they do not play an active role in collecting information or analysing the data as in many collaborative action research projects in the UK. It is inevitable that action research will develop differently in different countries because action research is culturally embedded in practice and will therefore reflect differences in social and political values between countries.

From this brief overview of action research in Iceland it is clear that action research has been expanding rapidly in Iceland during the last few years. There are at least four factors contributing to this development. Firstly, teachers in Iceland see an opportunity in action research for bottom-up improvements in classroom practice instead of the top-down curriculum development teachers have been experiencing during the last decades. Secondly I agree with Guðjónsson (2013) that teachers in Iceland have been inspired by McNiff's emphasis on action research as a self-study action research placing "the living 'I', in company with other living 'I's, at the centre of an enquiry" (McNiff, 2007). Thirdly I think teachers in Iceland have also been inspired by McNiff's vision of action research as a way to live out our values and make a contribution to develop the kind of society we wish to live in (McNiff, 2010, 2011). Lastly but perhaps most importantly teachers in Iceland feel the empowerment of action research (Kincheloe, 2003; E. Kjartansdóttir, 2010a, 2010b; H. Kjartansdóttir, 2010a). Whatever the reasons for the growth in action research in Iceland, hopefully it will continue to blossom at all school levels and contribute to teachers' professionalism and school development in Iceland.

Next I will describe and discuss the strengths and limitations of action research.

4.4 Strengths and limitations of action research

The literature indicates that the strengths of action research is that it enhances professional development of practitioners and it leads to changes in classroom practice (Somekh, 2006; Somekh & Noffke, 2009). Somekh and Zeichner's (2009) analysis of 46 action research publications from the last decade revealed that action research has been used as a successful strategy for educational reform

because it combines action with research and thereby gives the participants means to develop agency to improve practice.

Many of the studies analysed by Somekh and Zeichner (2009) also found that the group dynamics in action research groups were important in providing both professional and affective support to individual group members. Savoie-Zajc and Descamps-Bednarz (2007) found that the group supported and validated the reflection process as well as providing pressure on members to carry out their research. In a secondary school in England the action research group seems to enable teachers to become more willing “to take the risk” of making changes in the classroom (Haggarty & Postlethwaite, 2003, p. 438). Perhaps action research groups provide circumstances that create a collective zone of proximal development for the participants (Haggarty & Postlethwaite, 2003; Wennergren & Rönnerman, 2006). According to Vygotsky (1978) the internalization process of learning occurs in “the zone of the proximal development” (ZPD) which Vygotsky defined as:

the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers (Vygotsky, 1978, p. 86).

It has been established in a number of recent studies that differences in knowledge and expertise between group participants are not a necessary prerequisite for group members to learn from one another and assist each other in the zone of proximal development (Wells, 2002b). The teachers’ collaboration is essential in this process and opportunities for collaboration must be created, encouraged and valued but at the same time the collaboration must not be forced (Hodkinson, 2009). If the collaboration is obligatory and compelled then there is a danger of “contrived collegiality” (Hargreaves, 1994). That means that the teachers do not have power over the purpose, the outcome will be predictable and unlikely that it will lead to educational change. In action research it is emphasised that participation is voluntary and teachers have personal ownership of their research

(McNiff, 2010; Wells, 2002a). Hall (2009) came to the conclusion that the choice of topic or a personal research question was very important in this regard. It is also valuable to have in mind that teachers' learning opportunities such as action research groups will have different effects on individual teachers and the development of their professional "habitus" or identity and the same applies to whole workplaces or institutions (Hodkinson & Hodkinson, 2005; Hodkinson, et al., 2004).

However action research groups in schools have also encountered problems. Some teachers complain about lack of time to carry out their research. Others experience lack of competence in methods of gathering and analysing data and need more support in that field (Bartlett & Burton, 2006; Black, 2005; Campbell & Jacques, 2004; Haggarty & Postlethwaite, 2002; Peters, 2004).

There are contrasting views on the quality of action research. In his overviews of publications of action research Dick (2004, 2006) has stressed that discussion about theory development has been lacking in the literature while Noffke and Somekh maintained that the SAGE handbook of educational action research showed that "action research is much more richly theoretical than it has traditionally been understood to be" (Somekh & Noffke, 2009, p. 524). Hammersley (2004) considers action research a contradiction in terms on the grounds that the different goals of improving practice and creation of new knowledge creates incompatible orientation while Elliott (2009) sees all theory as a way to make improvement. McIntyre (2005) has drawn attention to this dilemma and the fact that reviewers have consistently found the academic quality of teacher research weak, contributing to improving practice but not to the accumulation of public knowledge. Many other educational researchers have also expressed this opinion (Brown, 2005; Pring, 2000) and agree with Hammersley (2008) in that the same criteria should be used to judge academic and teacher research. McIntyre (2005) explained there is a difference between the "craft knowledge for classroom teaching" and the public knowledge generated in academic research that links together empirical research and theory. In action research teachers develop context bound and situated knowledge about their professional work and that

knowledge is new in their personal context but rarely new public knowledge. Action research enables teachers to connect together their values, evidence embedded in daily experience and their research findings (Somekh, 2006) and that is very important as each classroom is unique and therefore theory has to be adapted and modified to local conditions (Wells, 2002a).

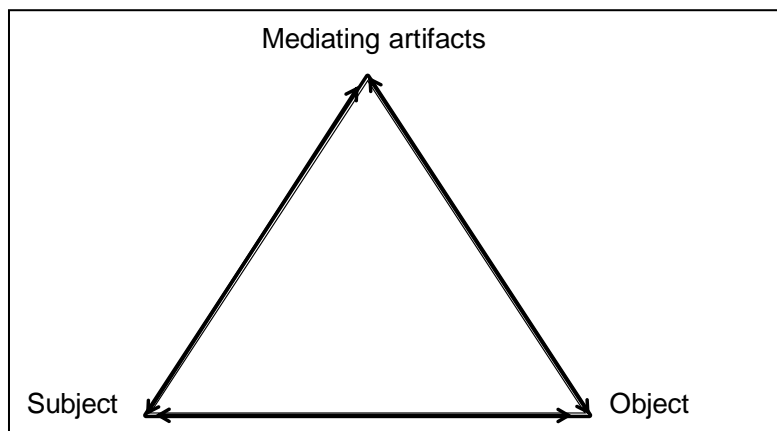
In academic research there are clear ethical rules to be followed set by universities but in action research in schools at the compulsory and upper secondary school levels there are usually no official ethical rules in operation for research. However, the general ethical rules for the teaching practice largely overlap with ethical research considerations in action research in the classroom (Lankshear & Knobel, 2004). The same question confronts teachers in action research in Sjávarsíðuskólinn. There are conflicting views on this issue as some consider it necessary to gain consent both from the student and their parents but others consider it sufficient to get students consent if the school has approved. I discuss this further in a section 8.2 on ethical issues.

In the next chapter I will describe activity theory or the aspects of the theory that I apply in my thesis. I will describe its base in Vygotsky's ideas and the development of the second and third generations of the theory and intervention research based on the theory of expansive learning by Engeström. At the end of the chapter I will discuss the similarities of action research and activity theory and how these two have been linked together in a useful way in educational research. But I will begin with the concept of mediated action from Vygotsky.

5. ACTIVITY THEORY

5.1 *Mediated action*

I used the conceptual framework of Cultural historical activity theory (activity theory for short) developed by Engeström to guide my research both in my action research with the “Change Laboratory” in the Change Room and in the case study of the action research group. Activity theory has its roots in the theory and research of the cultural-historical school of Russian psychology in the 1920s and 1930s. The most influential theorists were Vygotsky, Leont’ev and Luria (Engeström & Miettinen, 1999). The basic unit in the activity theory is the mediated action from Vygotsky’s learning theory, see Figure 5-1, that stresses the social nature of human learning and the role of language as well as other tools in learning activities (Wells, 2002b). Mediated action involves artefacts: sign, symbols, texts or cultural tools and these tools fundamentally shape the mediated action. The tools mediate between subject and object. Such action always involves an inherent tension between the tools and the individual or group using the tools in certain circumstances (Engeström, 2001). The idea of mediated tools is very important because mediated tools break down the boundaries between an individual’s mind and their culture and it shows how people can shape and control their behaviour by using and creating these tools (Engeström, 1999a). In other words activity is purposeful and essentially social. Language is the most important artifact and Engeström distinguishes between six types of artifacts according to the processes involved in their use. Firstly, “what”? or descriptive artifacts; secondly “who, what, when”? or narrative artifacts; thirdly “in which location”? or classification artifacts; fourthly “how”? or procedural artifacts; fifthly “why”? or explanatory artifacts and finally “where to”? or developmental artifacts (Engeström, 2007a, p. 34).



(Engeström, 2001, p. 134)

Figure 5-1 Mediated action.

The following section describes Engeström’s ideas about the second and third generation of the activity theory and begins with an explanation of the concept of activity.

5.2 The activity system

The central concept in activity theory is activity. The concept comes from Karl Marx but was developed in psychology by Leont’ev (1978). Leont’ev makes a distinction between activity, action and operation that he considers very important. An activity is needed to fulfil a certain need in society and what distinguishes activities are their objects where “the object of an activity is its true motive” (Leont’ev, 1978, p. 62). Therefore the object both motivates and directs the activity. An activity exists in actions. For example “school activity exists in school actions” (Leont’ev, 1978, p. 64). The activity is realised by an action or chains of actions that are stimulated by the motive of the activity and that are directed towards a goal. The methods used to accomplish actions are operations. Operations are related to conditions and they help the subject to realise the actions within the activity. Operations are routine processes that people are not always aware of. Actions are on individual level but activity is on a collective level.

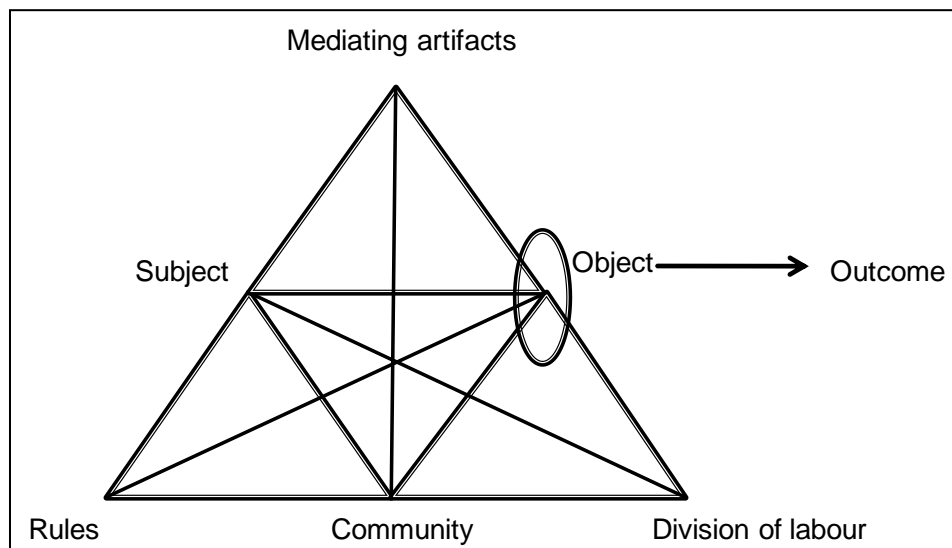
Engeström’s expansion of the basic Vygotskian triangle shows the collective dimension of an activity system and draws attention to the complex interrelationships between the subject and the social and cultural context, see

Figure 5-2. Rules refer to the values and regulation of action and interaction of subjects, the community is the group interested in the same object and the division of labour refers to division of tasks and power relations within the system. By adding the elements of rules, community and division of labour Engeström puts emphasis on the social aspects of the activity and calls for analysis of the interactions of these elements with each other (Daniels, 2004). The activity system becomes the unit of analysis in research and that calls for the integration of the system view and the participants view (Engeström & Miettinen, 1999). There are two processes simultaneously at work in human activity that relate the individual to the social and cultural surroundings; “internalization” i.e. the influence of social processes, and “externalization” i.e. the development of new tools. This is a complicated two way process of changing external activities into internal ones and the process of changing internal activities into external ones. The latter process opens up the possibility of transformation of practices (Engeström & Miettinen, 1999, p. 10).

Similarly there are two processes, firstly external and then internal involved in the development of individual mental abilities. Vygotsky explains that every function in a child’s cultural development appears twice or on two levels i.e. the social and the individual level (Vygotsky, 1978). The internalization process occurs in the zone of proximal development (ZPD) which was described in section 4.4. The mediated action is central to these processes of externalization and internalization.

Mediation by tools and signs is not merely a psychological idea. It is an idea that breaks down the Cartesian walls that isolate the individual mind from the culture and society (Engeström, 1999a, p. 29).

This leads to a combination of an individual and system view or micro and macro view of an activity system as illustrated in Figure 5-2.

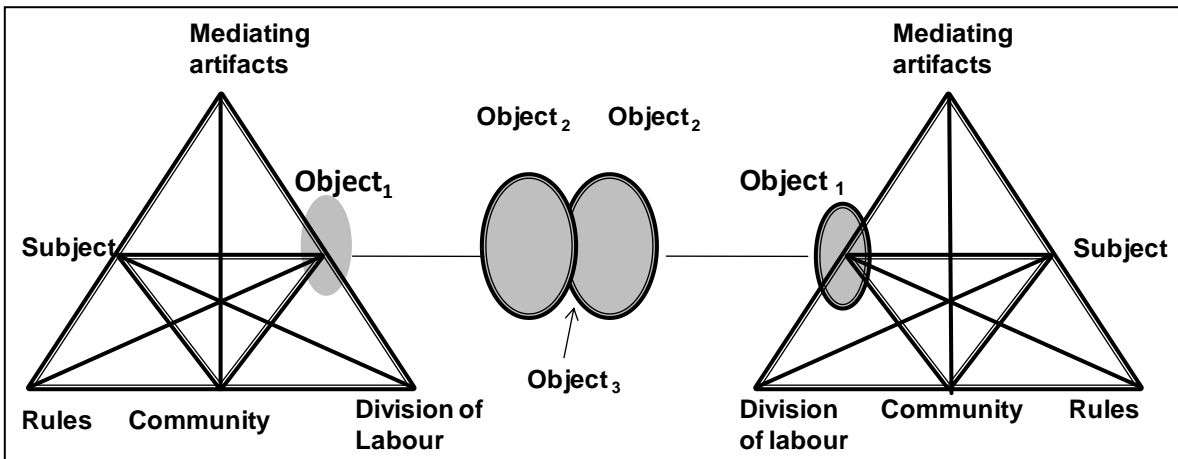


(Engeström, 2001, p. 135)

Figure 5-2 A collective activity system.

The concept of activity provides a new way to understand how change takes place. Activity theory draws our attention to possible tensions within the activity system (Wells, 2002b). Tensions and contradictions are present within each activity system and also between activity systems. These are potential sources for change or transformations (Engeström, 2001) and therefore for the improvement of work practice. The third generation of activity theory as illustrated in Figure 5-3 shows the interaction between two activity systems and Engeström stresses the “multi-voicedness” of activity systems.

An activity system is always a community of multiple points of view, traditions and interests. The division of labour in an activity creates different positions for the participants, the participants carry their own diverse histories, and the activity system itself carries multiple layers and strands of history engraved in its artefacts, rules and conventions. The multi-voicedness is multiplied in networks of interacting activity systems. It is a source of trouble and a source of innovation, demanding actions of translation and negotiation (Engeström, 2001, p. 136).



(Engeström, 2001, p. 136)

Figure 5-3 Two interacting activity systems as minimal model for the third generation of activity theory.

Activity theory has been used in various studies in the Centre for Activity Theory in Helsinki for analysing and redesigning work situations for example in industry, health, education and the postal service (Engeström, 1999b, 2000, 2001, 2007b; Virkkunen & Newnham, 2013). In educational research it has been used in various ways; in research on formative assessment and changes in teachers' identity (Crossouard & Pryor, 2008; Pryor & Crossouard, 2008), e-learning (Robertson, 2008), use of mobile devices (Waycott, Jones, & Scanlon, 2005), comparison of the physical classroom and the virtual one (Murphy & Rodríguez Manzanares, 2008), collaborative practice (Daniels, 2004) and computer-supported collaborative learning (Kaptelinin & Nardi, 2008).

One of the principles of activity theory is historicity (Engeström, 2001). Activity systems change over time and are always in a process of development. It is through the study of its history that we can learn about its tensions, contradictions and potentials for transformation. Activity theorists have developed the "Change Laboratory" as a method of intervention where historical analysis is used to develop expansive agency for change among participants.

Contradictions are the necessary power of expansive learning and the driving force of change within the activity system according to activity theory. (Edwards, 2008; Engeström, 2001; 2007b; Engeström & Sannino, 2010; 2011; Virkkunen &

Newnham, 2013). Contradiction is a concept from Karl Marx, it is dialectical and the primary contradiction is between the use value and exchange value of every commodity. Contradiction stands for opposites forces:

Contradiction generally refers to propositions which assert apparently incompatible or opposite things - "A and not A" (Engeström & Sannino, 2011, p. 369)

Contradictions are historical and therefore it is necessary to look at the history of the activity system where the contradiction resides, in order to identify contradictions in the present (Engeström & Sannino, 2011). Contradictions cannot be observed directly and therefore they need to be observed indirectly through their manifestations. Engeström and Sannino (2011) have developed a methodological framework to identify and analyse manifestations of contradictions. Through analysing a Change Laboratory in the home care for the elderly in Helsinki, Finland they identified four types of manifestations of contradictions "dilemmas, conflicts, critical conflicts and double binds" (Engeström & Sannino, 2011, p. 373).

Contradictions cannot be solved by combining the opposite options, they need to be solved by creating something new, "thirdness".

In the present context, the idea of "thirdness" refers to the generation of novel mediating models, concepts and patterns of activity that go beyond and transcend the available opposing forces or options, pushing the system into a new phase of development (Engeström & Sannino, 2011, p. 371).

The thirdness first appears as individual innovations, exceptions or deviations from the general form of practice and then it develops as other people also apply the thirdness and that gradually becomes the new ruling model in the activity system or a new object (Engeström, 2011).

Next I will describe the Change Laboratory and the two theories on which it is based: Engeström's theory of the expansive learning cycle and Vygotsky's theory of the method of double stimulation.

5.3 The Change Laboratory

The Change Laboratory is one type of developmental work research methodology advanced by Engeström for the expansive learning of researcher and participants in cooperation to transform the object of the activity system (Engeström, 2007b; Pihlaja, 2005). It is based primarily on Engeström's theory of the cycle of expansive learning, see Figure 5-4, but going through the expansive learning cycle can also be viewed as a collective aspect of Vygotsky's individualised idea of the zone of proximal development. Engeström explained:

It is the distance between the present everyday actions of the 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 action (Engeström, 1987, p. 174, as cited in Engeström, 2001, p. 137).

The term "double bind" Engeström used here is from Bateson's (1972) theory of learning that Engeström (2001) based his theory of expansive learning on.

Bateson (1972) described learning as a change process at four different hierarchical levels where learning becomes more complicated and difficult with each level. The simplest form of learning being at 0 level or "Zero Learning" that is a response to information that can be used again in similar circumstances. For example in a lesson when the school-bell rings the students learn that the lesson is over. "Learning I" refers to a trial and error process, conditioning or reinforcement where everything we do and perceive can become either a stimulus or response depending on what comes first. For example learning correct answers to questions that only have one correct answer that is viewed as an objective truth. "Learning II" means change in the process of Learning I so Learning I and II take place simultaneously and are steadily at work through peoples' communication. Learning II involves for example metathinking, learning how to learn and how the hidden

curriculum works in schools. Sometimes Learning II reveals to the individual a contradiction or a “double bind” situation and that can enhance “Learning III”. Learning III is the highest learning level and occurs very rarely. It involves questioning what you have learned at Learning II level and requires redefinition of the situation or one’s identity or both (Bateson, 1972).

Engeström builds his theory of expansive learning on Bateson Learning III level and he understands it first and foremost as a collective process (Engeström, 2001). Engeström defined a “double bind” as:

A social, societally essential dilemma which cannot be resolved through separate individual actions alone - but in which joint co-operative actions can push a historically new form of activity into emergence (Engeström, 1987, p. 165, as cited in Engeström & Sannino, 2010, p. 5).

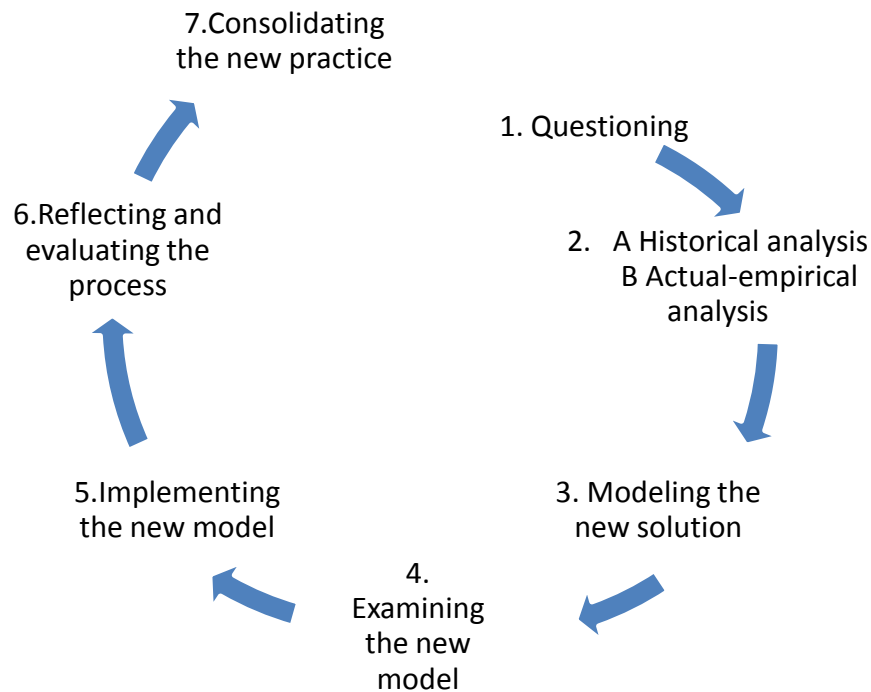
When collectively resolving the “double bind” situation by going through the expansive learning cycle people can change their practice and create a new form of practice. Changes can take place within all the elements of the activity system, subjects are not locked into a fixed identity, objects are not predefined, tools can be activated, learnt or developed, and the social aspects of rules, community and division of labour can be changed.

At each step in the expansive learning cycle the participants are likely to face manifestations of contradictions at different levels. It is important for the participants engaged in expansive learning to identify and discuss the manifestations of contradictions within the activity system of the learners. According to the theory of expansive learning contradictions can be identified at four levels (Jóhannsdóttir, 2010a) or as four different types of contradictions depending on their placement within the activity system (Roth & Lee, 2007). Contradictions at the first level are primary and appear within each element of the activity system.

Primary contradictions are recognised as inner conflicts between use value and exchange value and are reflected between an ideal

type of work and reality in practice (Pasanen, Toivianen, Niemelä, & Engeström, 2005 as cited in Jóhannsdóttir, 2010b).

Between the first and second step in the expansive learning cycle of questioning and analysis of data, see Figure 5.4., the participants are most likely to face primary or first level contradictions and indicate a need for change. Between the second, third, fourth and fifth steps in the expansive learning cycle of analysing data, and modelling, examining and implementing the new solution or form of practice, the participants are most likely to face secondary or second level contradictions between the elements of the activity system. A change in one element without a change in other elements in the activity system can cause a secondary contradiction. They cause disturbances within the activity system. For example, if a new tool is introduced and the rules stay unchanged or a change in the object occurs but the division of labour is unchanged. Secondary contradictions are the driving force for transformation of the practice (Engeström, 1999b). Between the fifth and sixth steps in the expansive learning cycle of implementing and evaluating the new solution or model of practice the participants are most likely to face tertiary or third level contradictions between the old and the new models of practice which can appear at all the elements within the activity system. Third level or tertiary contradictions appear when changes take place within the activity system and some people resist the changes or if the changes only function as deviations from the traditional practice and the system resists the new form of practice. Between the sixth and the seventh steps in the expansive learning cycle of evaluating and consolidating the new form of practice, quaternary or fourth level contradictions are likely to appear between the activity system of the participants and other activity system that are connected and interdependent. Fourth level contradictions appear when changes in one activity system call for changes in another activity system or activity systems need to work together in order to co-configure their activity. These can either be activity systems within the same institutions or another institution. These quaternary contradictions need to be resolved in order to stabilize or completely consolidate the new model of practice created through the expansive learning cycle (Engeström & Sannino, 2010; Jóhannsdóttir, 2010a, 2010b; Virkkunen & Newnham, 2013).

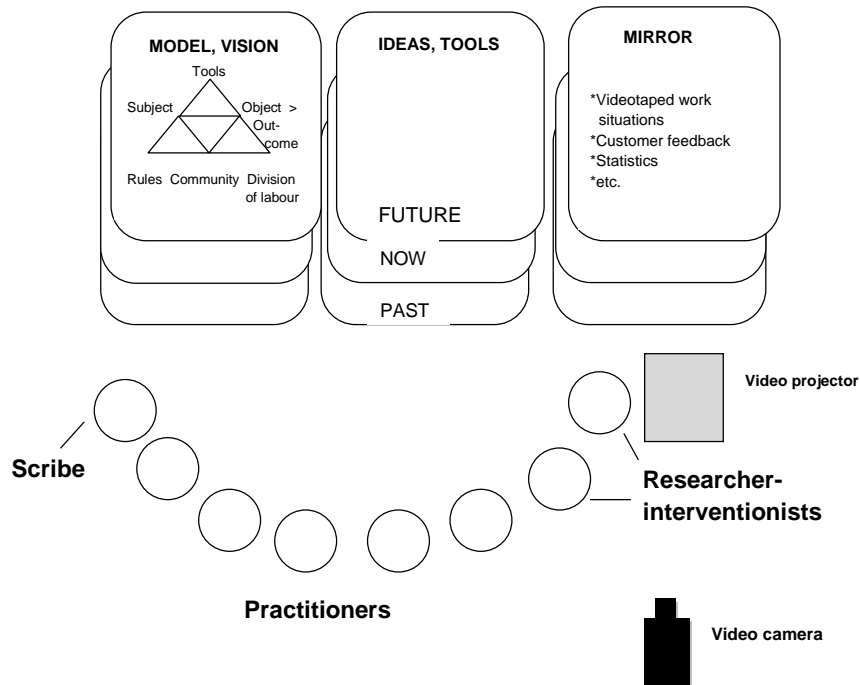


(Engeström, 1999b, p. 384)

Figure 5-4 The expansive learning cycle.

The Change Laboratory is also based on Vygotsky’s “method of double stimulation” where participants are put in a structured situation and provided with active stimuli or tools to construct new solutions to problems they are facing in their workplace (Engeström, 2007b). The intervention takes place through planned meetings in a special room or a space at the workplace. There the participants and the researcher take part in organized debate and dialogue about the history, current contradictions and the future possibilities of the practice under study (Engeström, 2007b). The first stimulus is the “mirror” in which the group identifies problems in the workplace by examining experiences for example on video. The second stimulus is the “model”, a conceptual framework of the activity system. These stimuli or “surfaces” are the central tools of the Change Laboratory with the third surface of “ideas” where new ideas about practice are produced and tested and tools created for analysis. The practical work of the participants moves between these three surfaces of “mirror”, “model” and “ideas” and also between the three time points of past, present and future (Engeström, 2007b). At the end of the process a new vision is planned and experiments with the new solutions are

carried out and evaluated. At the meetings one of the group members has the role of a “scribe”, who writes conclusions of the discussion on the surfaces. The meetings are videotaped so important parts of discussions can be reviewed later and a video projector is necessary for viewing video clips from the practice, see Figure 5-5 (Engeström, 2007b).



(Engeström, 2007b, p. 371)

Figure 5-5 Prototypical layout of the Change Laboratory.

What contributes most to the success of the expansive learning in the Change Laboratory according to Engeström, is that learning takes place both in a horizontal and a vertical dimension i.e. the “spatial-social” and “temporal-historical” dimension (Engeström, 1999c). The horizontal dimension being the three stimuli or surfaces of mirror, idea and model and the vertical dimension being the three time points of past, present and future. Engeström describes the Change Laboratory process in three main phases. The first phase is the analysis of the past and present contradictions in the work practice. The second phase is the design of a future vision and planning of improvements in work practice. The third phase is the implementation and evaluation of the new solutions (Engeström, 2007b).

The process of the Change Laboratory can also be described by the following seven steps that correspond to the steps in the cycle of expansive learning:

1. Question the current work practices
2. A. Analyse past development of the work practice
B. Identify and analyse the present contradictions in the work practice
3. Model vision for future and find concrete solutions
4. Plan improvements in the work practice
5. Try out proposed solutions by making changes in the work practice
6. Evaluation of solutions
7. Consolidating improvements (Engeström, 1999b; Pihlaja, 2005).

Steps 1, 3, 4, 5 and 6 are present both in action research and the expansive learning cycle. The major difference in the cycles is that step two in the expansive learning cycle of historical analyses and analysis of current contradictions in the work practice is not usually present in an action research cycle. Some have linked history of the workplace to action research but we had not emphasised that in the action research group in Sjävarsíðuskólinn. This emphasis on historicity, identifying manifestations of contradictions and the conceptual framework of the activity system is what the activity theory adds to the work of the action research group. The strengths are its dialectical historical view and the conceptual framework it provides to analyse social change in activity systems or at system level in workplaces.

Change Laboratories have been carried out in many areas of work, for example education, industry, agriculture, banking, media, health services, social services and the first one was in the postal service (Virkkunen & Newnham, 2013). One example is a Change Laboratory in a central surgical unit of a hospital in Finland with 21 participants who were representatives of the surgeons, surgery and anaesthesia nurses, anaesthesiologists and others working there (Virkkunen &

Newnham, 2013). The CL consisted of five two hour sessions and two follow up sessions from 2006 - 2007. The change made was to divide the surgery up into four subunits, three surgical rooms and a recovery room. Having the object more specialised made the work more medically meaningful for the professionals. The germ cell was identified as the “shared holistic responsibility for a patient’s chain of care” (Engeström, 2011, p. 620). The conflicts the staff were confronting were the loss of professional identity and pride through “the loss of object” because of difficulties in coordination of the services provided (Engeström, 2011, p. 614).

Another example is a Change Laboratory carried out 2008 - 2009 in the homecare for the elderly in Helsinki in Finland. The researchers had eight sessions with the managers over a eleven month period and they also did 13 video recordings of visits of homecare workers to the elderly and one follow up visit (Engeström, 2010; Engeström, Nummijoki, & Sannino, 2012). The problems of the elderly were loneliness, social isolation, lack of movements and amnesia. The outcome was the “Service palette” where the elderly could choose which service they needed each time from a range of different types of services provided by the homecare worker for example movement, shopping or cooking (Engeström, 2010). One of the services was a mobility agreement created in a CL conducted with the homecare workers themselves. The contradiction in the home care service for the elderly was found to be between safety and autonomy or the fear of falling and the need to move (Engeström, et al., 2012). The outcome of the CL was the creation of a mobility agreement between the homecare worker and the elderly person about regular physical exercises. The main finding was analysed as being “standing up from the chair” and the concept developed was “sustainable mobility” that integrated movements into ordinary actions within the homes of the elderly (Engeström, et al., 2012).

Engeström (2005) carried out a Change Laboratory in a middle school in Finland where the outcome was the final project, a cross-subject project done over one semester under teacher guidance but not set in the time-table and not dependent on a final test but a final product for display in the school. The final project differed from other Change Laboratories as it was not considered to be created in order to

solve contradictions in classroom practice but rather because of influence from new voices or “the power of multivoicedness” in the activity system of the classroom brought into the system by new teachers of immigrant students in the school (Engeström, 2005, p. 394).

A Change Laboratory was carried out in 2006 in a secondary school in Botswana to develop the pedagogical use of ICT in schools (Virkkunen & Newnham, 2013). Nine teachers and one school manager participated in seven meetings and two follow up meetings in the CL where they created four different projects. The projects evolved around developing a tool to increase students’ motivation, teachers’ collaboration, policy implementation monitoring system and audiovisual teaching tool (Virkkunen & Newnham, 2013). These projects were created to solve the main contradiction in the school although they relate differently to it. The main contradiction was analysed as between the students’ group with increased individual social problems and the teachers’ tools of instructing the whole class with little concern for individuals’ needs (Virkkunen & Newnham, 2013). The germ cell in the project was seen to be increased student-centred teaching through collaborative students’ projects and that was considered important development in order to enable the use of ICT in classroom practice (Virkkunen & Newnham, 2013).

Sannino (2010) carried out a Change Laboratory in a secondary school in Italy with twelve teachers and a technical assistant. The CL lasted for three months with two hour long sessions every two weeks. The teachers found it difficult to manage a class of 30 students while individual assessment was carried out and that reflected a contradiction in the pedagogy between individualism and control. One teacher turned the individual assessment into a collective game where two teams of three students competed, while the rest of the class acted as audience or helped the teacher with the scores and grading. The germ cell here was the collaborative assessment. Sannino reported a story of a change in practice made by one teacher and it is not clear if the other teachers made the same change in their assessment practice or found their own solution to the conflict.

The next section discusses similarities between action research and activity theory with examples of how they have been combined in educational research.

5.4 Activity theory and action research

There are strong similarities between action research and activity theory and Collins view that “CHAT and Freirean participatory action research are both deeply compatible and strongly complementary” can be applied to all types of action research (Collins, 2011, p. 100). Activity theory provides analytical tools which can reveal the possibilities of action research on a system level (Edwards, 2000) and bring into action research positive aspects such as the demand for historical analysis and a conceptual framework to develop new concepts (Ellis, 2011). Action research can through the development of new learning and teaching methods, add to activity theory the relationship between learning and development both in the context of students’ learning and teachers’ professional development (Wells, 2011).

There are certain similarities in the origins of the two theories found in the writings of Lewin and Vygotsky, who actually were friends and knew each other’s work in the 1930s (Stretsenko & Ariewitch, 2004 as cited in Somekh & Nissen, 2011). Langemeyer (2011) pointed out that both Lewin and Vygotsky considered research to have the power to bring about social changes in our society and insisted that the subject matter has to be studied “in the process of change”. They both were active researchers and political activists (Collins, 2011) and shared the view that the aim of research was both to create new knowledge to increase the understanding of society and to improve society in general and educational practice in particular. They saw the role of the researcher as a participant in the research process as a social practice to change the society, Lewin perhaps in a smaller and more restricted way than Vygotsky because Vygotsky “assumes interdependence between scientific progress and the liberation of the entire societal basis of human development” (Langemeyer, 2011, p. 148).

The cyclical process of action research and expansive learning are also very similar (Langemeyer, 2011). It is possible to compare each step in the action research cycle with each step in the expansive learning cycle but it is also possible

to emphasise the view that action research is at individual level where individuals deal with their tensions and conflicts while expansive learning is at social or system level where groups deal with contradictions as double bind situations. The action research cycles could therefore be described as smaller cycles that individuals or groups go through at each step in the expansive learning cycle. Activity theory can then be used to analyse change both at individual and institutional level. I will discuss this further in the discussion part.

Both action research and activity theory try to overcome the gap between theory and practice and connect them together as they are grounded on the assumption that “knowledge emerges as aspect of practice - or 'praxis' ” (Somekh & Nissen, 2011 p. 95). Some believe there is a different understanding in what knowledge constitutes in action research and activity theory. Ellis (2011) considers action researchers to claim that they develop "practical knowledge" through action research while those who work within CHAT develop general scientific knowledge. Chaiklin (2011) interprets Lewin’s writing as suggesting that social research should create both general and practical knowledge and I think that is actually happening through action research nowadays:

Social research should provide two kinds of knowledge: (a) general knowledge about the dynamic interrelations in societal practices, and (b) how to analyse a particular concrete situation in relation to these general principles, so that it can be a basis for action (Lewin, 1945, p. 128; 1946a, p.36 as cited in Chaiklin, 2011 p. 134).

Action research and activity theory have both been used successfully to link together learning and development in a dialogical way through combining research and developmental work in educational practice. Both action research and activity theory have been used to enhance professional development, both separately and together. They have been used together to encourage “occupational professionalism” in the teaching profession (Ellis, 2011) where occupational professionalism according to Ellis is characterized “by the exercise of judgment and collective reason within local and collegial structures built on trust and subject

to ethical accountability by occupational associations” (Ellis, 2011, p. 182). Edwards connects occupational professionalism to the development of agency (2000) or more recently “relational agency” (Edwards, 2007, 2010) and Ellis connects it to a process he identifies as “professional creativity” (2011). Feldman and Weiss (2010, p. 33) connected activity theory and action research to show how action research projects brought about changes in teachers’ identity or “teacher’s way of being as a teacher” that led to actual changes in classroom practice.

Wells (2011) connected activity theory and action research to describe his own personal development from a quantitative outside researcher to a qualitative action researcher when working with teachers action researchers changing their teaching practice. Wells argues that CHAT and action research fit well together based on Leont’ev’s understanding of the relationship between understanding and action. Wells explains how teachers’ action research is grounded in CHAT theory about learning as a collective process. Wells then uses the findings from the teachers’ action research projects to develop CHAT theory further i.e. the theory of learning as a dialogic mode of meaning making (Wells, 2011). In a dialogic mode of learning the teachers emphasise learning as an inquiry process where the teachers ask more open questions, more questions with no right answer and where the teachers are co-researching with their students. Wells concludes that then the teacher’s role changes from being an “evaluator” into a “collaborative leader” (Wells, 2011).

Pearson and Somekh (2006) connected action research and activity theory to investigate the possibilities for teachers in primary and secondary schools to change their practice using ICT tools in the classroom. Activity theory was used to inform the research, analyse data and as grounds for developing new theory of transformative learning. The theory of students’ transformative learning involves four learning outcomes: “learning creatively”, “learning as active citizens”, “engaging intellectually with powerful ideas” and “reflecting on their own learning” (Pearson & Somekh, 2006, p. 520). They found out that involving students in the planning of the projects and analysing data increased the students’ active learning and changed the dialogue between them and the teachers. Their conclusion was

that if transformative learning with ICT is to become the dominant way in the classroom, organisational changes are needed at system level in schools for example in the timetable, national tests and teachers roles as well as that each student must have a personal computer (Pearson & Somekh, 2006).

Somekh (2010) pointed out that activity theory and action research have similar values and aims. Somekh used the conceptual framework of activity theory to describe the development of CARN, The Collaborative Action Research Network, through its 30 years history of supporting the action research of practitioners. She looked at CARN as an activity system, described the development of its tools and how CARN has tried to solve the manifestations of contradictions that have appeared through its history (Somekh, 2010).

Action research and activity theory have also been connected together in the field of teacher education in order to enhance the learning process of the student teachers and the relationship between student teachers and their mentors in teacher education institutes (Orland-Barak & Becher, 2011).

Most of the academics who have in their research connected together activity theory and action research are outside researchers who have used the conceptual framework of activity theory to meta-analyse the findings of action research projects of practitioners (Collins, 2011; Edwards, 2000; Ellis, 2011; Feldman & Weiss, 2010; Kajamaa, 2012; Orland-Barak & Becher, 2011; Postholm, 2009, 2011a, 2011b; Somekh & Saunders, 2007; Wells, 2011). There are also studies where researchers let the participants themselves use the conceptual framework of activity theory to analyse their activity system at the workplace. One example is a study of the professional development of teachers in Rwanda when integrating ICT in their classroom practice (Hooker, 2009). In her first action research cycle Hooker conducted a survey, interviews and focus groups with primary and secondary school teachers where she collected teachers' narratives about "significant change" of integrating ICT in classroom practice. In her second action research cycle, Hooker conducted a three day workshop for 20 representatives from national institutes for teachers' and school's development in Rwanda. The activity theory conceptual framework was used by the participants in the workshop to discuss

narratives of teachers' experience of implementing ICT. There the participants identified through reflection and discussion the challenges and possibilities for enhancing ICT integration in school practice (Hooker, 2009).

Another example of a study where the participants themselves applied the conceptual framework of activity theory to analyse their activity system at work involved collaboration between professions in the "children's workforce" in England (Stuart, 2012, 2014). In this study the practitioners themselves created narratives of their work i.e. about their dilemmas and collaboration experience based on their action research. They then used activity theory to analyse the activity system of their work, based on the narratives, both individually and in a group. Stuart's research showed that this process enhanced the practitioners' learning and led to planning of organisational changes of their multi-professional collaborative practice.

Similar studies have been reported on by Leadbetter (2008) in England with multi-professional teams in the children services and with educational psychologists working with schools. The professionals meet in workshops, apply activity theoretical concepts to examine their practice, consider the elements of the activity system of their workplace, discuss possibilities of improvements and evaluate changes they have tried out in their practice (Leadbetter, 2008).

Darwin (2011) argues for action research as a methodology to use in research with activity theory as developed by Engeström (2000, 2001). Darwin suggests the integration of the conceptual framework of activity theory within the action research cycle (Darwin, 2011). Darwin (2011) argues that this will lead to more collaborative and sustainable forms of interventions and maintains that it will enhance the utility of both activity theory and action research. It democratises the use of activity theory and lessens the practitioners' dependency on outside researchers and it will enhance the social learning process and deepen the action research outcome.

Postholm (2009, 2011a, 2011b) connected action research and activity theory to study how she could enhance the social learning process of teachers participating in action research in a lower secondary school by encouraging critical reflections

on their teaching and introducing theoretical pedagogical concepts to them. This work led Postholm in collaboration with a fellow professor, Moen, to develop a new model for connecting research and school development work (Postholm & Moen, 2011). They are researchers working with school teachers in Norway and the model looks at that work both from the sides of the outside researcher and the school teachers. The Postholm's and Moen's model for research and developmental work connect together Engeström's (2001) theory of the expansive learning cycle and Coghlan's and Brannick's (2001) theory about two action research circles occurring simultaneously i.e. the action learning circle and the reflective circle that are built on the three pillars of content, process and premise. Postholm and Moen model of research and developmental work, called the R&D model, depicts the expansive learning cycle as the first level that they call the "primary circle". Above that is the "secondary circle", where teachers' and researcher's meta reflections take place through conversations on their experience in the primary circle. Above the secondary circle is the third level, the "researcher's plateau". This is a meta - meta - level where the outside researcher conducts research on the research and developmental work that took place in the primary and secondary circles. These three levels also rest on the three pillars of content, process and premise (Postholm, 2015; Postholm & Moen, 2011). Postholm has emphasised that the outside researcher can conduct research at all three levels. The researchers can do research *with* the teachers at the first level, the primary circle, they can do research *in* the reflective process at the second level, the secondary circle and from the third level, the researcher's plateau they can do research *on* the processes of the teachers' experience at the other two levels (Postholm, 2015, p. 55. The author's italics).

I have used the conceptual framework of the activity system in my data analysis, applied the second and third generation of the activity theory and connected my results to concepts used within activity theory. However, activity theory and action research are combined together in a new way as methodologies in the research. This was done in a new variation of the Change Laboratory which I call the Change Room, where I as an inside action researcher used the practitioners presentations of their action research projects directly in the Change Room as data in the "mirror"

as explained further in the next part, methodology and methods. There I also describe how I connected together action research and case study in my research and discuss the research methods used, ethical issues and the experience of conducting an inside action research in my workplace. But before I turn to the methodologies I will outline my research questions.

6. THE RESEARCH QUESTIONS

1. How can “the Change Laboratory” be used productively with action research to enhance professional development?

Subquestions:

What is the outcome of the Change Laboratory in terms of the following?

- a. Knowledge and understanding of the development in the school?
- b. Practical outcome of the action research projects to enhance learning?
- c. Changes in the discourse of the action research group at the meetings of the group in the Change Room?
- d. Developing new concepts about the changes that took place in the teaching practice in Sjárvarsíðuskólinn and a new concept for this new way for professional development for teachers i.e. combining activity theory and action research?
- e. Evaluation of the participants themselves of their experience of the Change Room?

2. How does participation in action research influence the participants?

Subquestions:

What is the influence of participating in action research regarding the following:

- a. Working methods in the classroom?
- b. Learning processes?
- c. Professional development?

3. How can the work of the action research group be improved?

I am doing an action research by the intervention of the Change Room and at the same time I am doing a case study of the action research group in the Change Room. The first and third research questions relate directly to my action research and the second research questions relates directly to my case study although they are intertwined in the Change Room.

In the next part on methodology and methods I will describe the methodology of action research and case study and explain how I link these together. Then I will describe the methodology of the expansive learning cycle within the Change Room and the activity system as the unit of analysis in this research. But first I will position my study within the paradigms of research.

PART III: METHODOLOGY AND METHODS

7. METHODOLOGY

7.1 The paradigm

This research was conducted within the interpretive paradigm with a strong influence from the critical paradigm. Activity theory provides a theoretical and conceptual framework of the research. This has philosophical roots in the work of Karl Marx and the cultural-historical school of Russian psychology in the 1920s and 1930s (as was described in chapter 5) that befits the critical paradigm. Therefore my research is also greatly influenced by the critical paradigm. However the main focus of the research is on the perspective of the participants in the Change Room and their subjective meaning which is consistent with the interpretive paradigm.

The emphasis on the participants' perspective and interpretation of their actions and experience is built on my view of reality as multi-voiced and constructed by the participants themselves and through our interactions. The participants' perspective, because it is created by them, will influence their views and guide their actions. The aim to interpret the subjective meanings of the participants is consistent with the interpretive paradigm (Pring, 2004). Taking the standpoint of the participants in the research is important from the symbolic interactionist stance within the interpretive paradigm (Denzin, 1978, as cited in Crotty, 1998). The assumptions are that we act towards things according to the meaning we place in them; the meaning is created in interaction and changed through an interpretive process (Crotty, 1998). I found it important for me in the research to focus on the participants' multiple voices for example through extensive quotes and taking the data back to the participants for confirmation.

According to Mead and symbolic interactionism, every person is a social construction as we become to be persons through interaction with our society (Crotty, 1998). Symbolic interactionism sees people experience everyday life as an objectified reality because of the "reification" of social reality, but this objectivity is socially constructed, we construct our common intersubjective reality (Berger & Luckmann, 1966). The researcher can therefore be seen as an instrument of the

research and cannot be separated from the participants because their social interaction created the data (Guba & Lincoln, 1991). This fits well with my research as it is an insider action research and I was one of the participants in the Change Room at the same time as I was the researcher directing the Change Room and conducting a case study of the participants in the action research group in the Change Room. Although I was a participant in the study it was also important for me as the researcher to be aware of any potential influence and reflect critically on my interaction with the other participants.

It is common within research in the interpretive paradigm to use grounded theory, as developed by Glaser and Strauss (Crotty, 1998). Grounded theory is an inductive process where a new theory can emerge and be generated from data. In my research on the other hand I used first and foremost a deductive process by using the activity theory and the conceptual framework of the activity system in my data analysis. In this respect my study departs from the interpretive paradigm and becomes influenced by the critical paradigm as the activity theory is grounded on critical theory.

My research also departs from the interpretive paradigm in another way and that is because the interpretive view puts main emphasis on enhancing our understanding of the existing conditions and is considered to be “an uncritical form of study” (Crotty, 1998). In my action research, the Change Room, a critical reflection, change and transformation in classroom practice is called for and in that respect fits better with the activity theory and the critical paradigm. In the critical paradigm, research puts emphasis on challenging current state of affairs and seeks to bring about change and transformation (Crotty, 1998).

Karl Marx laid the foundation of the critical theory with his theory of dialectic materialism. History is central in Marx’s theory and a dialectical perspective on development where every form of society has its inner contradictions and the basic conflict being between capital and labour (Crotty, 1998). Marx laid the grounds for the emphasis in activity theory for dialectically linking together the individual’s reality and the social structure as well as seeing people as the creators of their own reality (Engeström, 1999a). Marx introduced the concept “activity” that is the

central concept and the unit of analysis in my research. Marx put the concept activity into materialistic context according to Leont'ev:

For Marx, activity in its primary and basic form was sensory, practical activity in which people enter into a practical contact with objects of the surrounding world, test their resistance, and act on them, acknowledging their objective properties (Leont'ev, 1978, p. 12).

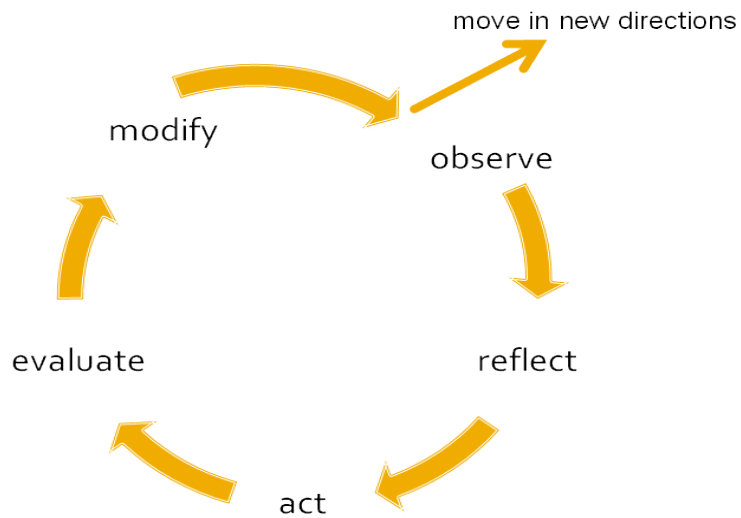
Activity puts into focus tasks that people are working with in their interactions with people and the purpose of research on the activity and people tasks must take into consideration the possibilities for their development and transformation. In my research the focus is on the possibilities of the development of classroom practice and the teachers' professional development through action research.

7.2 Action research and a case study

My research is a case study of teachers' action research in the Change Room that is embedded in my action research as a school leader. The aim of my action research is to enhance the teachers' professional development by introducing a new methodology of the Change Room and the aim of the case study is to enhance the understanding of the influence of the action research on the participants.

7.2.1 Action research

My action research is influenced by the ideas of Jean McNiff that befits the living theory approach. It places the individual "I" at the centre of an inquiry with the question: How can I improve my practice? The individual goes through the action-reflection cycle, see Figure 7-1 i.e. the process of "observe – reflect – act – evaluate – modify – move in new directions" (McNiff & Whitehead, 2006, p. 9). The process is cyclical or like a spiral because it never ends, it is on-going as when you have reached a provisional conclusion, that in itself will have raised a new question and the cycle starts again. The aim of this process is to improve practice and generate new theories of practice.



(McNiff & Whitehead, 2006, p. 9)

Figure 7-1 The action reflection cycle.

McNiff presented the action research spiral, see Figure 7-2, as three-dimensional and added side spirals to the main spiral to enable researchers to address many different problems at one time without losing sight of the main focus of research (McNiff, 1988). She sees it as a likely possibility that the action research project can develop in unforeseen directions as different aspects of it emerges during the process.



(McNiff, 2009)

Figure 7-2 The action research spiral.

In my action research I followed the plan of action research as put forward by McNiff and Whitehead.

- What is my concern?
- Why am I concerned?
- What experiences can I describe to show why I am concerned?
- What can I do about it?
- What will I do about it?
- What kind of data will I gather to show the situation as it unfolds?
- How can I explain my educational influences in learning?
- How will I ensure that any conclusions I come to are reasonably fair and accurate?
- How will I evaluate the validity of the evidence-based account of my learning?
- How will I modify my concerns, ideas and practice in the light of my evaluations (McNiff & Whitehead, 2006, p. 79).

Somekh (2006) put forward the following eight methodological principles of action research.

Action research:

- integrates research and action in a series of flexible cycles involving, holistically rather than separate steps
- is conducted by a collaborative partnership of participants and researchers
- involves the development of knowledge and understanding of a unique kind
- starts from a vision of social transformation and aspirations for greater justice for all
- involves a high level of reflexivity and sensitivity to the role of the self in mediating the whole research process
- involves exploratory engagement with a wide range of existing knowledge
- engenders powerful learning for participants
- locates the inquiry in an understanding of broader historical, political and ideological contexts (Somekh, 2006, p. 6-8).

I see these principles as in line with the living theory approach to action research. McNiff and Whitehead (2009a, p. 319) agree as they view their work as “complimentary to Somekh work on action research as a methodology”. These principles put emphasis on the self and social justice that I see as important because in action research we try to improve our work in the direction of our personal values. It points both to knowledge creation and transformation that rests on learning. It is also easy to connect these principles with the activity theory especially the emphasis on collaboration, transformation, learning and understanding of historical and social contexts.

I have already described the object of my action research and how I will use the Change Room to improve my work with the action research group. In the Change Room I used video and audio recordings of the group meetings that were transcribed into documents. I interviewed one teacher about her action research project in the Change Room and the experience in the Change Room. To evaluate the conclusions in the Change Room I brought them back to the action research group for validation (McNiff & Whitehead, 2006). I also asked the group to evaluate the process of the Change Room in a survey. Furthermore I used a research diary that is a central method in action research, (see section 8.1.5) and discussions with my critical friend to guide my action research.

Having a critical friend is very important in action research in order to discuss sympathetically but critically the research and to challenge one’s own established way of thinking (McNiff & Whitehead, 2006). He or she needs to be both supportive and critical and help you to identify your bias. Both persons enter the relationship on their own terms and mutual respect is vital (Ingvarsdóttir, 2006). Ladkin (2004, p. 541) has described critical friends as “friends who are willing to act as enemies”. The critical friend also has an important part in the process of validation of the research. The critical friend can confirm that the research took place as described by the researcher, can assist the researcher to give a meaningful and trustworthy account of the research and offer an evaluation of the research (McNiff, et al., 2003).

My critical friend in the Change Room had all these roles. My critical friend was selected because we had been critical friends since 2005 when the action research group started and during that time we had been working together as school leaders. But we had not undertaken before as large a task as my critical friend has done for me in the Change Room. She supported me all the way through the execution of the Change Room, the analyses and the writing up process at our critical friends meetings, informal discussions, and reading and providing both positive and critical comments on my data analysis and interpretation of the findings. She read and gave me written feedback on all parts of the thesis and we discussed extensively some parts of it. It was also valuable to be able to inform her about some of the feedback from my supervisors and discuss it further to better enable me to understand and interpret it in order to be able to make appropriate amendments. In our discussions I experienced the advantages of “exploratory talk” for understanding and thinking (Barnes, 2008).

Exploratory talk is hesitant and incomplete because it enables the speaker to try out ideas, to hear how they sound, to see what others make of them, to arrange information and ideas into different patterns (Barnes, 2008, p. 5).

Often dialogues with my critical friend helped me to sort out my theoretical thinking, I could try out my ideas of interpretation of the data and how to connect my interpretations to various concepts and theories.

7.2.2 Case study

A case study fits well with research on a phenomenon that is taking place in a real context today and that the researcher has little control over. It is very appropriate when research questions beginning with “how” are being put forward (Yin, 2009). This description fits well with my research on the action research group. Furthermore a case study is suitable for inquiry into a complex social phenomenon where process and changes over time are being viewed as in my study (Anderson, 1990; Merriam, 1998). At the same time it will allow me to give a holistic and in-depth picture of the work of the action research group.

According to Mabry a case study is “the empirical investigation of a specified or bounded phenomenon” (2008, p. 214). Stake defines a case as a specific, unique, bounded system (Stake, 2000). The case study will be a holistic single unit of analyses design (Yin, 2009) and an intrinsic one (Stake, 2000). The unit of analysis will be the action research group and it will be viewed as an activity system (Engeström, 2001). There are both theoretical and practical reasons for this choice of study design. A case study is both consistent with activity theory and action research. In both instances the research is pointed at a particular case and explores the interactive processes within that particular case. The activity system is the basic unit of analysis stressing the social nature of expansive learning (Engeström, 1999c, 2001). The action research group is also the active unit in Change Laboratories as the Change Room (Pihlaja, 2005). Action research, although an individual activity is also social and depends very much on collaboration, critical friends and group meetings as previous research has shown (Evans, 1997; Savoie-Zajc & Descamps-Bednarz, 2007; Wennergren & Rönnerman, 2006). The reasons for choosing this particular group for the research were first and foremost that I was doing action research in my own workplace and it is both logical and practical to connect the case study of the action research group directly with that. I am doing a case study in my own organisation as well as doing action research with this group. Insider research has both great advantages and some difficulties (Coghlan, 2003; Coghlan & Brannick, 2001) as will be discussed in section 8.3.3 and chapter 14.

The focus of the case study is on the participants’ perception and meaning of their projects (Creswell, 2007). I used number of methods to collect data in order to gain multiple perspectives. That enabled me to view the subject from many sides or to crystallise it (Richardson, 2005).

The Change Room, which will be described in the next section, is the site for my action research where I link together activity theory and action research in an intervention research in order to enhance the participants’ professional development and to facilitate changes in classroom practice. The case study is on the action research group in the Change Room to investigate how participation in

action research influences the participants. Activity theory is also used as a theoretical framework in the case study on the action research group in the Change Room. The case study of the action research group is therefore embedded in my action research.

In the next section I will discuss how I link together the activity theory and action research in the Change Room. I will describe the development of the work within the Change Room and how we used the following learning actions in that process i.e. the peer interviews, the discussions at the meetings, the presentations of the participants' action research projects and visualising the projects into the activity system of the classroom with the teacher as the subject.

7.3 The Change Room: The expansive learning cycle and action research

I consider it strength of the Change Laboratory to use the conceptual framework of the activity system to identify and analyse manifestations of contradictions in the practice. I also think it is very important for teachers to take time to look at the present problems in teaching practice through historical analyses. This was especially important at this point of time in Iceland which is undergoing great changes in the secondary school system as was described in the second part, the context.

The action research group was invited to go through a Change Laboratory of a new kind. The aim was to improve the first steps of the action research process by going through the first step in cooperation to increase reflexiveness and enhance agency of group members. I call it the Change Room (Breytingastofan in Icelandic). The main departures in the Change Room from Engeström's Change Laboratory were twofold. The information about the tensions in the classroom practice is not gathered by outside researchers but by the teachers themselves and the proposed solutions were not be planned at a system level and carried out by the whole group but at individual level through action research of the group's members. The Change Room does not model future vision of the school as a system but tries to analyse the manifestations of contradictions so each teacher will be better equipped to make their own decisions about the changes that are needed in classroom practice. These changes should lessen the gap between

teachers' values and practice. The changes should lead to enhancement of student learning and the improvement of teachers' well-being. Each teacher needs to decide what improvements are appropriate in each classroom and how it will be implemented because each classroom is unique. Teaching is often an isolated role; the teacher is alone in the classroom with the students most of the time. The teacher is very autonomous regarding teaching and learning methods although collaboration within subject departments is required regarding the subject covered in each course and the composition of assessment. The teachers themselves have to experience the need for changes in classroom practice and find solutions to the tensions they identify in their classroom. If the teacher has control over the action research process, the topic under research, the methods and the analysis then it is much more likely that the teacher will gain ownership of the research and then it will lead to empowerment and real changes in classroom practice (E. Kjartansdóttir, 2010b; McNiff, 2010; Wells, 2011). To connect activity theory with teachers' action research encouraged us to carry out historical analysis, directed our attention to discussions of manifestation of contradictions in classroom practice and Sjárvarsíðuskólinn's community and provided us with the conceptual framework of the activity system. All the group members of the action research group were invited to participate in the Change Room and other staff members were invited to participate in some of the meetings. The meetings were held either in the meeting room that the action research group had held its meetings in before or in a classroom when presentations with power points were on the agenda or when guests were invited. One meeting was held in the school's staff common room when Jean McNiff came for a visit.

The Change Room process can be described by the following seven steps, see Table 7-1. These steps correspond to the steps in the Change Laboratory based on the description of the Change Laboratory in Finish Post in 1996 (Pihlaja, 2005). In the third column there is a short description of how the group went through these seven steps in the Change Room. There is not a direct time line through the seven steps but in Table 7-2 information is provided on all the group meetings in the Change Room in the actual sequence with date, time and major topics under discussion at each meeting.

	Change Laboratory	Change Room in Sjávarsíðuskólinn
1.	Question the current work practice	Question current teaching and learning methods in classroom practice. Group discussion. September to November 2009.
2. A	Analyse past development of the work practice	Identify and analyse main changes in classroom practice in Sjávarsíðuskólinn. Participants interview each other, discussions in small groups and the whole group. December 2009 to February 2010.
2. B	Identify and analyse the present contradictions in the work practice	Identify and analyse tensions in classroom practice at present. Presentations of individual action research projects and discussions about them at group meetings. March 2010 to May 2011.
3.	Model vision for future, find solutions	Find concrete solutions to improve classroom practice. Individual and small group work and group discussions. February 2010, October 2010 and February 2011.
4.	Plan improvements in the work practice	Individual work. Introductions and group discussions. February 2010, October 2010 and February 2011.
5.	Try out proposed solutions by changes in the work practice	The proposed solutions tried out through action research projects of individual teachers. September 2010 to May 2011.
6.	Evaluation of solutions	Individual action research projects evaluated at meetings from March 2010 to May 2011. Evaluation of the Change Room at meeting and survey in May 2011.
7.	Consolidating improvements	Consolidating improvements through action research reports and interviews.

Table 7-1 The seven steps of the Change Laboratory and the Change Room.

Meeting	Date	Time	Topics at meetings in the Change Room:
1.	10.9.2009	11:15-12:00	1) Introduction by Hjordis of the idea about the Change Room. 2) General discussions about the value of action research and the course on ar at master level at the University of Iceland. 3) Gunnar's introduction of changes in term plans in first year of study Mathematics. 4) Introduction by Rakel on time for meetings this school-year.
2.	15.10.2009	11:15-12:00	1) Introduction of the proceedings and theory behind the Change Room by Hjordis. 2) Discussions on critical friends led by Rakel. 3) Discussions on the preparation for the session on action research at a conference at the University of Iceland, School of Education, led by outside consultant.
3.	5.11.2009	11:15-12:00	1) General discussions on the tasks confronting teachers at present, with focus on the changes in the new secondary school curriculum with emphasis on students' competence led by Rakel.
4.	7.12.2009	13:00-15:00	1) Pair interviews about the changes from the past to the present, organized by Hjordis. 2) Oddur og Katrin introduce the concept students' competence.
5.	4.2.2010	11:15-12:00	1) Transcripts of pair interviews and interpretation of each in relation to the activity system of the school, handed out and explained briefly by Hjordis. 2) Rakel gathered information on who are critical friends this school-year. 3) Introduction by Halþór of a conference on action research in Reykjavík. 4) Hjordis introduction of a conference on action research in York in June 2010. 5) Participants introduce their action research topics.
6.	11.2.2010	16:00-18:00	1) Participants introduce their action research topics. 2) Discussions in small groups on the findings of the pair interviews about the changes from the past to the present, led by Hjordis. 3) Discussion in the whole group about the findings of the pair interviews about the past, led by Hjordis.
7.	4.3.2010	11:15-12:00	1) Magnús presentation of his survey on students' attitudes towards experiments in Physics.
8.	18.3.2010	16:00-17:30	1) Þuríður Jóhannsdóttir presentation on the activity theory. 2) Magnús action research on experiments in Physics put into the activity system of the classroom jointly by the group.
9.	15.4.2010	11:15-12:00	1) Bjarki presentation of students' project work in a cross-curriculum optional course with Sandra.
10.	10.5.2010	13:00-15:00	1) Anna presentation on her survey of students' attitudes towards teaching and learning methods in Biology. 2) Elísabet presentation of an unexpected critical incidence in her classroom.
11.	6.9.2010	11:15-12:00	1) The Change Room and meeting times led by Hjordis. 2) Discussion on action research led by Halþór the outside consultant. 3) Material distributed by Hjordis i.e. an article and a form for research plan. 4) Discussions on critical friends led by Rakel.
12.	6.10.2010	14:50-16:30	1) Presentation by Hjordis and discussions on the interpretation of the outcomes in the Change Room about the changes from the past to the present. 2) Participants introduce their action research topics.
13.	18.11.2010	11:15-12:00	1) Presentation by Finnur of his ideas on teaching of English grammars in secondary schools and a survey on the topic among English teachers. 2) Presentation by Helena on her action research on the Saga court and students' databank.
14.	7.12.2010	13:00-14:45	1) Presentation by Jónas on his action research on individual students' assessment. 2) Presentation by Rakel on her action research on students' learning expression.
15.	3.2.2011	11:15-12:00	1) Discussions on analyses of individual action research projects in the activity system of the classroom led by Hjordis. 2) Participants introduce their action research topics.
16.	24.2.2011	11:15-12:00	1) Discussions on a trip to an action research conference in York led by Hjordis. 2) Presentation by Ingunn on her action research on students' attendance.
17.	9.3.2011	14:50-16:00	1) Presentation and discussions on action research led by dr. Jean McNiff professor at York St John University. 2) Presentation by Mist on her action research project on active and creative students' learning.
18.	31.3.2011	11:15-12:00	1) Presentation by Elísabet on her action research project on students' attitudes towards learning Geology.
19.	10.5.2011	13:00-15:00	1) Presentation by Andrea on her action research project on communication with students on Facebook. 2) Presentation by Íris on her action research on students' assignments. 3) Presentation and discussions led by Hjordis on interpretation of data in the Change Room.
20.	1.9.2011	11:15-12:00	Follow-up meeting. Presentation and discussions led by Hjordis on interpretation of data from the Change Room.

Table 7-2 List of meetings in the Change Room with the date, time and main topics under discussions at the meetings

The Change Room was conducted from autumn 2009 until spring 2011 or for two school years. The total number of participants was 21 in the Change Room, 18 in the first year and 17 in the second. Descriptions of the participants are given in section 9.1. The outside consultant attended all the group meetings and commented on and gave advice on the action research projects. He did not provide individual assistance between meetings except with power point presentations for conferences. The role of the outside consultant is discussed in section 12.2.2.

In Table 7-3 a list is provided of all the participants and their action research projects, when they were conducted, their focus and when they introduced (I) and presented (P) their projects at the group meetings in the Change Room. In the thesis there are descriptions of 16 action research projects of 18 participants (including myself). Three participants presented their work outside the frame of the Change Room, one before it started and two at other meetings in the school. I decided therefore not to include them in the data analysis of the Change Room. Further overviews of the action research projects are given in section 11.2, detailed descriptions of two projects in sections 11.5.1, 11.5.2 and short descriptions of 13 projects of 15 participants in appendices 12.1 to 12.13.

Each participant conducted their own action research project apart from two cases when two teachers worked together on the same project. The teachers themselves decided on the topic for research, the classes involved, the methods for collecting the data and the analysis of the data. All of the participants used diaries and open and closed questions to students to collect data. Some also used audio and video recordings of their lessons and documents. The ownership of their projects was therefore solely theirs which is considered very important in action research (McNiff & Whitehead, 2006). Underlying all the projects was the collective aim of the group to increase the students' responsibility for their studies. The teachers felt that the students were not showing enough responsibility, for example not buying their school books on time, not handing in their assignments at the right time, not doing enough homework and not showing enough interest in participating in the work in the lessons.

Pseudonym	Biographics	Action research project carried out	Action research project	Time of introduction (I) and presentation (P) of action research projects in the Change Room
Andrea	(40+ Mathematics 6)	2009-2011	Communication on Mathematics with students on Facebook	I: 11.2.2010 P: 10.5.2011
Anna	(20+ Biology 1)	2009-2010	Teaching and learning methods in Biology and students' attitudes towards them	P: 10.5.2010
Bjarki	(60+ Danish 23)	2009-2010	Project work in a cross curriculum optional course in Danish and History	I: 4.2.2010 P: 15.4.2010
Dagmar	(50+ Citizenship 9)	2010-2011	Participation in an international project on sustainability. Creating students assignments and teaching guidelines	I: 6.10.10
Elisabet	(30+ Geology 1)	2009-2011	Students' attitudes towards Geology	P: 10.5.2010 and 31.3.2011
Finnur	(30+ English 2)	2009-2011	English grammar teaching	I: 6.10.12010 and 18.11.2010
Gunnar	(50+ Mathematics 7)	2009-2011	Reading Mathematics. "Shift reading"	I: 11.2.2010
Helena	(30+ Icelandic 1)	2010-2011	Students assignments in Icelandic, creating databank and the "Court of sagas"	P:18.11.2010
Ingunn	(50+ School leader 24)	2009-2011	Staff and students' attitudes towards real attendance and change in the grade for real attendance	I: 11.2.2010 and 6.10.2010 P:24.2.2011
Íris	(50+ Danish 19)	2009-2011	Various students' assignments in Danish	I: 11.2.2010 and 6.10.2010 P:10.5.2011
Jónas	(40+ Mathematics 11)	2009-2011	Cooperation with students on composition of assessment in Mathematics, alpha - beta - gamma	I: 11.2.2010 P: 7.12.2010
Katrín	(20+ Chemistry 2)	2009-2011	Preparation for the new curriculum in Chemistry	P: 7.12.2009
Lára	(60+ English 17)	2009-2010	English course in a trial of a class based periodic system	I: 4.2.2010
Magnús	(60+ Physics 8)	2009-2010	Students attitudes towards experiments in Physics	I:11.2.2010 P: 4.3.2010
Mist	(50+ Icelandic 22)	2009-2011	Students' learning the history of 20 th century Icelandic literature through a visit to a care home for the elderly and interviews with old people	I: 11.2.2010 and 6.10.2010 P: 9.3.2011
Nanna	(50+ Biology 0)	2010-2011	Various students' group assignments, cooperative learning	I: 6.10.2010
Oddur	(50+ Chemistry 7)	2009-2011	Preparation for the new curriculum in Chemistry	I: 11.2.2010 and 6.10.2010 P: 7.12.2009
Petra	(50+ School leader 20)	2009-2011	The Change Room	I: 10.9.2009 and 15.10.2009 P: 6.10.2010, 3.2.2011 and 1.9.2011
Rakel	(40+ Icelandic 4)	2009-2011	Icelandic: Expression but not depression	I: 4.2.2010 and 6.10.2010 P: 7.12.2010
Sandra	(40+ History 20)	2009-2011	Project work in a cross curriculum optional course in History and Danish	I: 11.2.2010 and 6.10.2010 P: 15.4.2010
Telma	(50+ Student counsellor 12)	2009-2011	Develop an optional course, Learning methods, in cooperation with the students (dyslexia and dyscalculia)	I: 11.2.2010

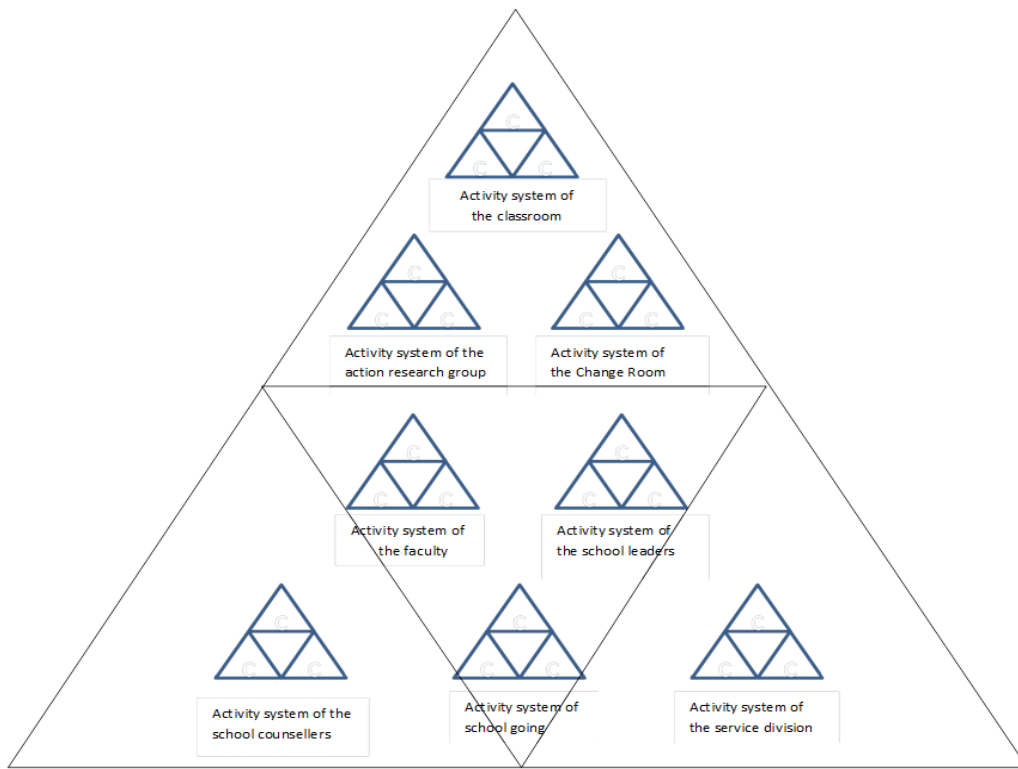
Table 7-3 Overview of the action research projects in the Change Room

Next I will explain the activity system as the unit of analyses in my research and give an overview of all the activity systems involved in my study.

7.4 Unit of analysis

In the study of the Change Room the activity system is the unit of analysis. The activity system has the following elements: subject, object, tools, rules, community and division of labour as was described in chapter 5. Each element in the activity system is related to all the other elements, they are separate but all interdependent. The activity system is the point of inquiry and at the same time the object of the study i.e. learning and development occur in the activity system. The focus of the analysis of data is on the connections between all the elements of the activity system and also co-operation and tensions with other activity systems. The activity system that is the focus of this study, the action research group in the Change Room, is part of Sjárvarsíðuskólinn, a secondary school that is a network of interconnected activity systems but not a single structure with only one power system (Engeström, 1999c). This also emphasises the multi-voicedness within and between activity systems (Engeström, 2001). When studying and analysing educational change it is especially important according to Engeström to take into consideration interaction between multiple activity system (Engeström, 2008b).

The focus in the Change Room is on the activity system of the classroom from the point of view of the teacher as the subject, but other activity systems are also involved in the study, some because participants work within different activity systems in Sjárvarsíðuskólinn and some because of tensions on the interface or boundaries of different activity systems in Sjárvarsíðuskólinn. Activity systems outside Sjárvarsíðuskólinn are also influencing the action research group in the Change Room, some because they influence the participants and some because they are directly involved in the action research of participants. See overview of all the activity systems influencing the action research group in the Change Room in Figure 7-3.



Activity systems within Sjárvarsíðuskólinn

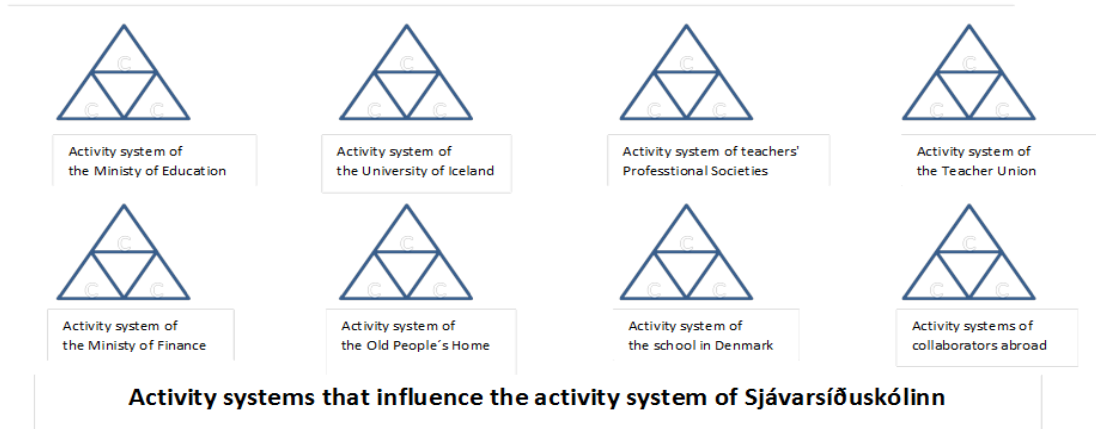


Figure 7-3 Overview of the activity systems related to the Change Room.

In the next chapter I will describe the research methods I use in the study i.e. interviews, observations, surveys, documents and a research diary. Then I will address the ethical issues involved in the study and that this is an insider action research. Finally I will describe the data analysis process and ways to evaluate the Change Room.

8. METHODS OF INQUIRY

8.1 Data collection methods

Five different methods of data collection were used in my research: interviews, observations, surveys, documentary analysis and a research diary. These research methods are varied and provide an opportunity to get in-depth information that are rich in context and enable me to give a holistic picture of the Change Room and the action research group. In the Change Room, documents i.e. transcriptions of the audio-recordings of discussions and presentations at the meetings and pair interviews were essential. In the case study it was important to have many different sources of information (Creswell, 2007).

In the following discussion I will describe the general principles of these methods. I used these methods in my action research, the Change Room and the case study and there is an overlap in the use of the methods between these research methodologies as the case study is embedded in my action research.

8.1.1 Interviews

The participants in the Change Room conducted interviews in pairs with each other about the changes from the past to the present in Sjárvarsíðuskólinn and I conducted interviews with four teachers from the action research group, one about the action research project and three about their experience in the Change Room.

The interviews were semi-structured and designed to yield rich data (Kvale, 1983). "The interviews are the main road to multiple realities" (Stake, 1995, p. 64). They were theme oriented, guided by an interview schedule with the same questions in all interviews in the Change Room but obviously the interviews evolved differently. The questions were designed according to the theoretical framework of the study i.e. activity theory, see questions in Appendices 5, 6 and 7.

An interview is a conversation between two people that involves the interaction between three components, the interviewer, the interviewee and the circumstances of the interview (Verma & Mallick, 1999). The meaning will be socially constructed during the interview and narratives mutually created by the interviewer and the interviewee (Silverman, 2001).

The interview gives the researcher an opportunity to get direct information about the ideas, values and feelings of the interviewees as they themselves define and describe them. That was the case in the interview with participant about the action research project in order to get a better insight into the values and pedagogical ideas that the action research project was grounded on. This is especially important when the purpose is to make the analyses from the point of view of the subject or the participant.

My interpretation is only one of many possible interpretations (Kvale, 1983) but equally I need to maintain a questioning stance towards the authenticity of narratives from the interviewees (Hammersley, 2008). They are influenced by their social position and recognizable cultural scripts when describing their professional life within Sjárvarsíðuskólinn. The view they present of themselves can strengthen certain parts of their identity and ignore others (Järvinen, 2000). This again can be influenced by the cultural-, social- and power relations, i.e. expectations and behaviour in the interviews, the community of the subject and by my role as deputy head teacher in Sjárvarsíðuskólinn.

8.1.2 Observations

Observations were carried out in the classrooms of one teacher, whom I also interviewed. This teacher who was doing an action research project that involved students visiting to a care home for the elderly. I was interested in observing the actions and interactions of the students and experiencing myself the students' reactions to and participation in this assignment. I wrote field notes as soon as possible after each observation and make both factual descriptions and memos of first impressions and ideas of interpretations which is important in observations (Merriam, 1998). During my observations I also took some photos and short video-clips that I watched but did not transcribe.

The problem that I faced in the classroom is the possibility of my presence having affected the behaviour of the teacher and students, causing it to become atypical (Cohen, Manion, & Morrison, 2007; Merriam, 1998). It is likely that my presence has changed the classrooms climate and caused the participants to present themselves in a favourable manner and behave according to the school's rules. I

try to explain these effects in my interpretation of the data (Merriam, 1998). I also need to be aware of the danger of over identifying with the participants (Gans (1982) as cited in Merriam, 1998).

8.1.3 Surveys

I carried out a survey among participants in the action research group at the end of the Change Room in May 2011 (see the questionnaire in Appendix 9). The aim was to obtain an overview of the attitudes of the whole action research group towards their participation in the Change Room, the influence of action research on their working methods and views towards their job and explore possible ways to improve the work of the action research group. It was a questionnaire mainly with closed questions but they got an opportunity to express their views in their own words and answering a few open questions. I used a Likert-type response grid with five possible answers for each individual item to be able to aggregate the views of participants and to give frequencies of response to the positive and negative aspects of the Change Room and action research (Oppenheim, 1992).

I was able to ask a few questions about action research in a larger survey among the whole staff group in May 2011 (see questions in Appendix 10). The aim was to collect information about the influence of the action research on the culture of Sjárvarsíðuskólinn as a whole. Although it was not the main focus of my research I think it is necessary to look at possible influence of the work of the action research group on Sjárvarsíðuskólinn as an activity system.

8.1.4 Documents

Various documents were collected or created and used in the action research, the Change Room and the case study. The main ones include the following:

- Minutes of meetings of the Change Room
- Presentations of the participants in the Change Room
- Research reports of the participants in the Change Room
- Teacher stories by the participants in the Change Room

- Various documents from teachers about their action research projects for example students written comments, evaluation of the changes made in classroom practice, students' assignments, students' products
- Photographs
- Annual reports on the action research group

Minutes of meetings of the action research group in the Change Room were the most important data from the Change Room and were transcribed between the meetings and subsequently used by the group. The documents provide information about the development of the group through the expansive learning cycle. They also give insight into the action research projects of the participants from their own point of view but also give indications of tensions within the group. In the reports and presentations the participants express their views and feelings in their own words without the intervention of the researcher (Silverman, 2000). However, the researcher's interpretation of the text is influenced by the research questions and the activity theory. In some instances the documents served as substitutes for descriptions of activities that the researcher was not able to observe directly (Stake, 1995). The ownership of the reports of their action research projects as data is in the hands of the participants as they wrote in their own words descriptions and explanations of their action research projects (Cohen, et al., 2007). It added depth and authenticity to the data but it made coding and comparisons more complicated although here the conceptual framework of the activity theory guided my analyses.

8.1.5 Research diary

I have written a research diary during the whole research period. Diaries are important in all research to describe the progress of the research, changes in the research plan, data collection, analysing and reflection (Richardson, 2005). Richardson (2005) provides useful division of the purpose of research diary with his four types of notes i.e. observational, methodological, theoretical and personal. Observational notes have the purpose of providing descriptions and information to create a time-line of the research. It also provided valuable pieces of data for the thesis (McNiff, et al., 2003). Methodological notes have the purpose of evaluating

the process of data collection, discussion of what I have learned and give ideas for next steps in the research. Theoretical notes have the purpose of providing material for ongoing data analysis during the research, formulating hypotheses, critiques and ideas of connections between data clusters. I asked “What is the significance of my learning?” (McNiff & Whitehead, 2006, p. 113). Personal notes allowed me to capture, make sense of and reflect on feelings, surprises, achievements, anxieties and other experiences. I tried to avoid bias in my research and I have tried to identify and record it in my diary and take it into account, especially in my discussion on insider action research. I was not able to write my diary according to this division but I find it useful to have it in mind when I read, and reread my diary and reflect on my reflections in my diary.

I will now discuss the treatment of the main ethical issues involved in the research, i.e. ethical approval, informed consent and anonymity.

8.2 Ethical issues

8.2.1 Ethical guidelines

Qualitative researchers are guests in the private spaces of the world. Their manners should be good and their code of ethics strict (Stake, 2000, p. 447).

I followed the Graduate School of Education Ethics policy (GSE, 2009), the BERA revised ethical guidelines for educational research (BERA, 2004), ethical guidelines of the University of Iceland for research in Iceland (HÍ, 2006) and the Icelandic teachers’ ethical code of practice (KÍ, 2002). As Mockler has pointed out, ethics of action research lies at the boundaries of the ethics of research and the ethics of practice and therefore I needed to take both into account (2007). I also needed to take the ethics of practice into consideration because the Change Room was an insider research as will be discussed in section 8.4. I gained a certificate of ethical research approval from the Graduate School of Education at the University of Exeter, see certificate in Appendix 2. I also notified the Data Protection Authority in Iceland about the research, see a letter of reception in Appendix 3.

8.2.2 Informed consent

Voluntary informed consent was gained from the participants as ethical rules stress (BERA, 2004; HÍ, 2006; SELL, 2009). This is an ethical rule because it respects the privacy and autonomy of individuals and arises from the participants' right to freedom and self-determination (Cohen, et al., 2007). Some stress that as the most fundamental principle (Anderson, 1990) but others point out that the researcher faces the dilemma of wanting to comply with the duty of giving full information to the participants about the research questions but at the same time he does not want to "contaminate" his research by giving too much information to the participants (Silverman, 2001). This was not a problem regarding the action researchers who participated in the Change Room but it could have been regarding the students in the classrooms I observed as I did not explain in detail my research to them and they do not have the same general knowledge of research as the teachers. I wrote two different letters of informed consent, one for the action research group in the Change Room, see Appendix 4 and one for the students in Mist's classes, see Appendix 5. The letters were written in Icelandic and later translated into English.

The meetings of the action research group in the Change Room were audio- and videotaped, the interviews where the participants interviewed each other in the Change Room were recorded and some classes of the teachers in the case study were also audio- or videotaped. As Stake has pointed out there is "no chance of avoiding at least a little intrusion" (Stake, 1995) and there is a danger that people will feel an intrusion when interactions are recorded. I therefore included information about that in the letters of consent.

Parents' consent was not gained, neither for the teachers' action research projects nor observations of classroom practice. There are conflicting views on this issue as some consider it necessary to gain consent both from the student and the parent but others consider it sufficient to get students' consent if the school has approved. It is possible to interpret the BERA guidelines in line with the latter viewpoint as it states in rule 16 that the research needs to seek approval from those who "act in guardianship" or as "responsible others" (2004, p. 7). It could be said that the head

teacher of Sjárvarsíðuskólinn can act as a guardian instead of the parent and give the consent (Jones & Stanley, 2008). I considered it sufficient to gain students' consent on the grounds that they have the capacity to decide for themselves (Masson, 2000, as cited in Doyle, 2007). The students' age range is from 16 to 20 years and the students are not vulnerable students. Furthermore the research is directed at the school and classroom practice but not at the students as individuals so I considered it appropriate and enough to gain approval from the head teacher of Sjárvarsíðuskólinn for the Change Room. This was deemed to be acceptable by the GSE ethics committee and the form was signed on that basis.

8.2.3 Anonymity

The identity of the participants will not be revealed in the thesis to protect their anonymity as ethical rules require both in England and Iceland (BERA, 2004; HÍ, 2003, 2006; SELL, 2009) and as is general practiced in research. It has been pointed out that it is often very difficult to protect identity of the participants (Merriam, 1998) especially from those who have knowledge about the research or from "all the people who really matter" (Malone, 2003, p. 809). This is especially difficult in a small community as in Reykjavík, Iceland. People can be identified otherwise than by name (Doyle, 2007). In this research there is a danger that participants can be identified by gender, teaching subject, teaching experience, object of their action research projects or a combination of these factors. Therefore I shared the findings with the group to give them an opportunity to see what information would be revealed. Nobody asked for information to be withdrawn.

The ethical rule of anonymity is based on the premise that the participants in research desire anonymity. But that is not the case in all research because some feel that they lose the ownership of their own life-stories when anonymised (Grinyer, 2002).

It could also be the case in action research that participants feel that they lose the ownership of their own research. But ownership of research is very important rule in the methodology of action research (Hall, 2009). In my research in the Change Room the ethical rule of anonymity was in conflict with the rule of ownership of action research and also in conflict with the rule of respect for bibliographical rules.

The question arose if I should present real names or pseudonyms when I made references to articles, reports and teachers' stories written by participants in the Change Room. I decided to use pseudonyms in the text of the thesis to comply with ethical rules but to use real names in the references and bibliography to honour ownership of published and presented data.

Next I will discuss the strength and difficulties of this being an insider action research and this will also be discussed further in chapter 14.

8.3 Insider action research

Insider action research is research that is conducted in the researcher's own workplace and puts the researcher in two roles:

Insider action research describes the process when a member of an organisation undertakes an explicit action research role in addition to the normal functional roles they hold in an organisation (Holian & Coghlan, 2013).

There are both strength and weaknesses in carrying out insider action research such as I conducted in the Change Room in Sjárvarsíðuskólinn, especially as I had two different roles as a researcher and a school-leader, that I tried to co-configure.

Insider action research clearly has some advantages. I know the community very well in Sjárvarsíðuskólinn and therefore it was easy for me to create space for my role as a researcher there (Coghlan & Brannick, 2001). It was easy for me to get permission for the research and I had a very good access both to staff and students of Sjárvarsíðuskólinn. I also had a good access to various data and knew where to find information. Also to my advantage was access to a good office, a meeting room and to the various equipment I needed for my research. It is also an important advantages that I had previous knowledge of the history and culture of Sjárvarsíðuskólinn and the everyday life and communication pattern (Coghlan, 2003; Coghlan & Brannick, 2001). This knowledge was useful at the meetings in the Change Room and also to enable me to collect richer information than I would otherwise have been able to do (Coghlan, 2007).

It can be strength to have knowledge of the conditions but it can also be a weakness if the researcher cannot look at the data with an open mind but only with preconceived ideas. There was a certain danger that my 20 years of working experience in Sjárvarsíðuskólinn let me take some things for granted and not investigated them and also a danger that I have not revealed some difficulties. I have, for example decided not to discuss in the findings, difficulties between individual teachers within faculties neither at the present or past despite some teachers discussing them in their interviews about the changes from the past to the present in Sjárvarsíðuskólinn. I think it is not according to Icelandic teachers ethical code of practice to discuss teachers who are not participants in the action research group and do not have an opportunity to explain their point of view (KÍ, 2002). But there is also a possibility that I am wrong and that this is an example of manifestation of a contradiction Engeström calls a “critical conflict” and is the most difficult and appears very rarely in Change Laboratories (2010).

Feldman and Weiss (2010) point out that there can be many reasons for people to ignore or choose not to observe tensions at their work. One reason can be that it is often difficult to accept personal feelings and face the reality as it is. Another reason can be that it is sometimes embarrassing to reveal things as they are especially if the foundation is based on false preconditions (Feldman & Weiss, 2010).

The idea of the Change Room came from me, a school-leader and therefore there was a danger that the teachers considered me having the ownership of the research. But in action research it is very important that the teachers themselves experience having the ownership of their action research, each one deciding their research question, methods and collecting their own data etc. (Black, 2005; H. Guðjónsson, 2008; McNiff & Whitehead, 2006). I felt there was a tension on the ownership of research in the Change Room. One of the participants pointed out at the beginning that if the Change Room was on the agenda of all the meetings of the action research group there would be a danger that the teachers would feel that the school-leaders were taking over the action research group. (Research diary 9. 3. 2010). We therefore decided that the Change Room would not be on the

agenda of all the meetings but nevertheless I recorded all the meetings and all discussions were included and used in the research. I also decided that it would be best to use the action research projects of individual teachers as much as possible to get the tensions to surface rather than to use data from myself as a researcher. Although this is not in line with the usual proceedings in Change Laboratories I consider this to be appropriate to action research and necessary to show respect for the research culture that had been created and developed within the action research group in Sjárvarsíðuskólinn. I discussed this extensively with my critical friend and we both agreed on this conclusion. This is one of two main differences between the traditional Change Laboratory and the Change Room.

In my role as a researcher I did not have as much time for analysing the data of the Change Room as I had planned beforehand. This led to changes in the time plan of the research and the research was not as valuable for the participants as it could have been. The researcher I worried about the participants' learning process "are they critical enough or do they only blame it all on outside factors?" (Research diary 29. 1. 2010). I was also afraid of having too much influence, when I listened to the recordings I worried that I spoke too much at the meetings so I tried to change that. I asked one of the participants about this but he had not noticed that and neither had my critical friend when we discussed this matter. They felt that I needed to talk to explain the proceedings and what to do. I also felt that I should have directed the discussions at the meetings better as some participants talked a lot but others spoke very little at the meetings (Research diary 11. 2. 2010).

Next I will describe and discuss the data analysis methods, use of NVivo and how I used activity theory in the data analysis process. I will describe my emphasis on members checking both for verification and as a part of the analysis process. The findings are transferable and the concepts created will be continued to be developed by the participants and other staff members in the school.

8.4 Data analysis

8.4.1 Data analysis process

The data analysis process took place during the whole duration of the research both because it was a necessary part of the methodologies of the Change Room and also because it was an interactive process and therefore important to start the data analysis process as soon as data collection was begun (Merriam, 1998; Miles & Huberman, 1994; Stake, 1995). The data analysis began after the first group meeting in the Change Room. The analysis of the first data influenced the collection of the next data set and so forth. In the Change Room this was especially important as the aim was that the data descriptions and data analysing helped the participants to make decisions about their next steps in their action research projects and it also helps the analyses of the action research project in the activity system of the classroom.

In my research I used both computer based and manual methods to analyse my data. I used the computer program, NVivo (QSR NVivo 8 and 10), for the storing, organisation and data analysis process. In addition I also read the transcriptions of the meetings, group talk and interviews again, again and again and used multi-coloured pens to code and group the data into categories as well as to find examples to express the findings. I also used general diaries for writing my memos.

It has been pointed out that there is a certain danger of NVivo creating a distance or a wall between the researcher and the data (Creswell, 2007; Welsh, 2002, as cited in Ozkan, 2004) but I considered the advantages greater, that is of organisation of the data from different sources, organising coding, coding and comparisons of codes (Creswell, 2007, p. 168-9). Ozkan (2004) points out that NVivo is time saving for data management and provides help with building up a rigorous database, coding the data and searching for relationships in the data.

The data analysing process was a mixture of a deductive process and an inductive process i.e. of prespecified coding and codes created during the coding process. I used the conceptual framework of the activity system for organising the coding

system in NVivo as a basis for my coding, see overview in Table 8-1. Table 8-1 is from NVivo that show the first coding system for the activity system of Sjárvarsíðuskólinn. The basic coding system is that each element within the activity system is a special code and the tensions and contradictions were added to that, together with the turning points from the past to the present. Table 8-2 shows the inductive coding of the turning points from the past to the present. Table 8-3 shows the combination of deductive and inductive codes of the elements and outcome of the activity system of the classroom in the present. Table 8-4 shows similarly the codes for the action research group in the Change Room.

Name	Created On
Activity system, past	972010 16:12
Tools, past	972010 16:13
Subject, past	972010 16:13
Rules, past	972010 16:14
Outsiders	1572011 12:08
Object, past	972010 16:16
Division of labour, past	972010 16:14
Contradictions, levels	1672010 13:03
Conflict, presentation of contradictions	972010 16:17
Community, past	972010 16:14

Table 8-1 Coding system for the activity system of Sjárvarsíðuskólinn.

Name	Created On
Turning points, the past	972010 16:45
Outside factors	972010 17:14
Technical revolution	972010 17:27
Teachers Union Pay contracts	972010 17:27
Self -evaluation	972010 17:29
Laws and regulations	972010 17:15
Secondary school Act 2008	972010 17:26
Secondary school Act 1996	972010 17:26
Law on legal age	972010 17:27
General curriculum 1999	972010 17:15
Inside factors	972010 17:16
School Self-evaluation	972010 17:30
Parent cooperation	972010 17:49
Housing and instuments	972010 17:25
Changes in school-rules	972010 17:35
Change of head teacher	972010 17:26
Assessment	972010 17:16
Ideas about future changes	1982010 19:59
Contradictions	1982010 21:12

Table 8-2 Coding for turning points from the past to the present

Name	Created On
Activity system, present	1982010 19:54
Tools, present	1982010 19:56
Tensions, present	1972011 15:26
Subject, present	1982010 19:56
Rules, present	1982010 19:58
Outsiders	1572011 12:09
Outcome Student voices	1372011 12:48
Outcome Active Learning	1372011 12:44
Object, present	1982010 19:55
Division of labour, present	1982010 19:56
Community, present	1982010 19:57

Table 8-3 Coding system for the activity system of the classroom.

Name	Created On
Action Research Group	1372011 10:25
Tools	1372011 10:27
Tensions, conflict	1572011 11:54
Subject	1372011 10:26
Rules	1372011 10:27
Outsiders	1572011 12:06
Outcome Learning by transferability	1372011 10:28
Outcome Knotworking	1372011 10:29
Outcome general	1572011 11:51
Outcome Agency to change	1372011 11:52
Explicating change	11122014 21:50
Diagnosing a need for change	11122014 21:49
Contemplating change	11122014 21:50
Object	1372011 10:27
Division of labour	1372011 10:27
Community group leader	10122011 12:53
Community general	1572011 11:52
Community critical friend	26122011 13:56
Community consultant	1372011 13:07
Support	10122014 21:13
Show the way forward	10122014 21:14
Serve as a mirror	10122014 21:15
Question	10122014 21:13
Points out links to theory - pedagogy	10122014 21:13
Phrase	10122014 21:13
Listen	10122014 21:12
Encouragement to present ar findings; talk, write	10122014 21:23
Challenge	5122014 15:59
Builds up trust	10122014 21:14
Action reseach, method, conference, course	512015 18:00
Community College MS	1572011 11:53
Community	1372011 10:27
Activity system arg	1372011 10:35

Table 8-4 Coding system for the action research group in the Change Room.

The data analysis took place at three levels, the first level was descriptive, i.e. transcriptions of the meetings and interviews. The second level was creating categories, for example through putting the action research projects in the activity system and discussing them. The third level was theorising for example creating concepts of the tensions in classroom practice, outcome of action research projects and the learning of the participants in the Change Room. Although I deductively used activity theory in my research, some topics and categories emerged from the transcripts that I worked inductively with. Codes created along the way were mainly in relation to the outcome of the Change Room. It was necessary to move back and forth between these three levels of data analysis: to and from description and interpretation, and to and from data chunks and concepts.

Creswell (2007) describes how data analysis of case studies must involve a detailed description of the case and its context. Although I was studying one case, the action research group in the Change Room I approached it as a multiple case study as I started by doing within-case analysis with a detailed description of the action research project of each individual in the group and then a thematic cross-case analysis of the group as a whole. By this method I provided a more rich and thick description of the case showing respect to the ownership of the individuals of their action research projects. I also avoided or minimised the problem of “anecdotalism” (Silverman, 2005) in qualitative studies as it shows how the findings are based on investigation of all the action research projects in the Change Room and not only on “a few well-chosen ‘examples’” or the two projects I chose as examples to describe in more detail to provide better understanding of the case. This is a data reduction process that involves pulling the data apart to increase trustworthiness and then putting it back together to find patterns and new meanings. Stake points out that the search for understanding is often a search for “correspondence” that is patterns or consistency within certain conditions (1995, p. 78). That process was both directed at the action research group and the individual action research projects within it. Stake describes it as follows:

Two strategic ways that researchers reach new meanings about cases are through direct interpretation of the individual instance and through aggregation of instances until something can be said about them as a class (Stake, 1995, p. 74).

Verification or member checks

Taking the data back to the participants in the Change Room was both an important step in my analysis process as well as a necessary step for verification of the findings (Creswell, 2007) and testing the validity of my knowledge claims (McNiff, 2010). Stake ((1976) as cited in Miles & Huberman, 1994) also points out the ethical aspect of member checks as he sees it as the participants' right to know what findings will be presented. The participants got all the transcriptions of the meetings and their own interview about the past in Sjárvarsíðuskólinn and group talk about the present classroom practice. I also brought my interpretation of the data back to the group both on the individual action research projects in the activity systems, the tensions in classroom practice and the development of the group as a whole in the expansive learning cycle. This I did mostly during the Change Room from 2009 to 2011. There was a joint construction of the research by the researcher and the participants in the Change Room and my emphasis was to create a participant centred research rather than researcher centred research (Ravitch & Wirth, 2007). Finally when I wrote the Findings chapters in the thesis in 2014 to 2015 I sent to the participants, by e-mail, the descriptions and quotes in the words and documents of each individual and I sent the general outcome of the action research projects to the whole group. I received written answers in e-mail from all the participants, most of them short and positive remarks but some longer with comments and speculations about the findings and the interpretation.

One of the participants in the action research group played an especially large role in this validation process i.e. my critical friend who discussed with me and gave me verbal and written critical feedback through all the research process and writing the thesis from 2009 to 2015. This was really valuable for me and she was ready to say if she did not agree, did not understand, further explanations were needed or new aspects to consider. McNiff (2010) puts emphasis on getting critical feedback

from a critical friend in action research, in order to check if the findings are relevant, accurate and authentic. It is especially important in insider action research to get the critical friend to critique the interpretation of the findings in order to avoid bias (McNiff, et al., 2003) and tackle “the messiness” of action research (Pine, 2009, p. 236).

The findings tell the story from the point of view of the subject, that is the participants in the action research group, therefore their perceptions and meanings were presented as well as my interpretation. It was very important to get their feedback on my interpretation of the data and I consider that their reactions have supported the trustworthiness and credibility of my findings.

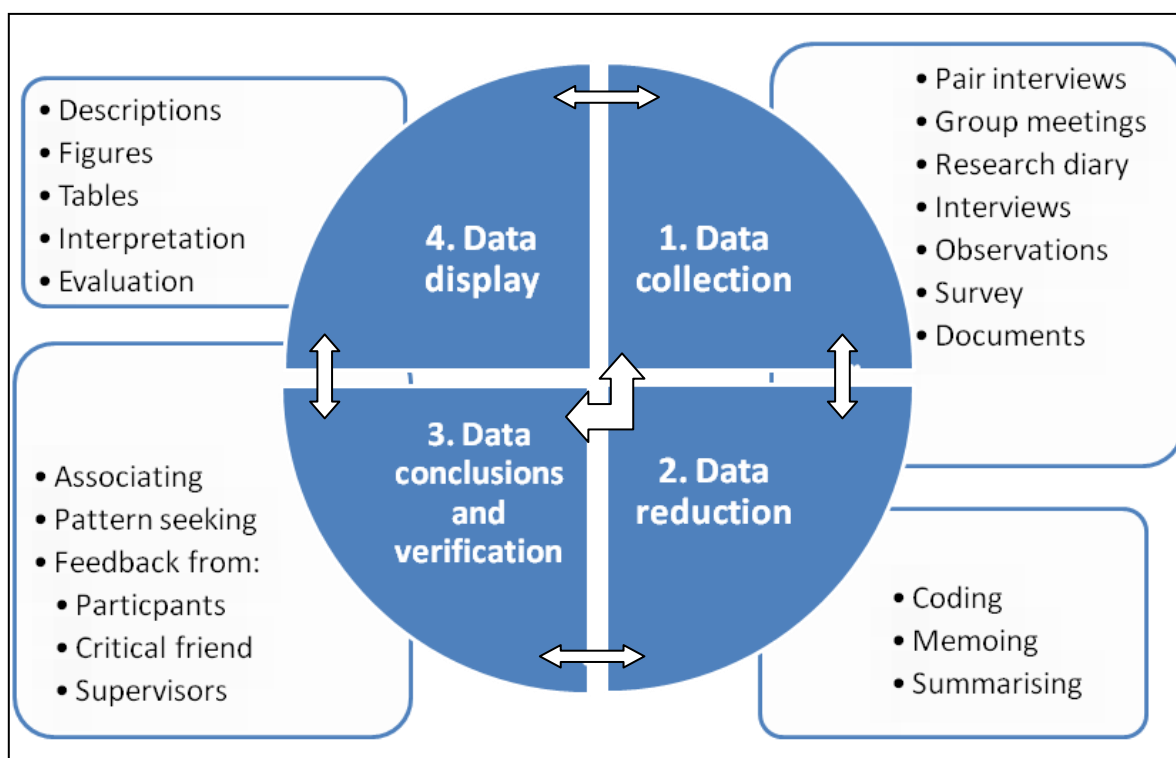
It honours the implicit contract between researcher and informant to provide feedback about findings. It also provides an invaluable means of corroborating them ... allows them to evaluate the findings in the light of their superior experience of the setting (Robson, 2002, p. 485).

During the research process I presented my research at conferences both in Iceland (Thorgeirsdóttir, 2010a, 2012a, 2012c; 2013) and abroad at international conferences on action research (2011a, 2012b, 2014) and activity theory (2011c). I rehearsed some of the presentation in front of the group in the Change Room and received verbal feedback from them and others were sent to the participants of the Change Room and people invited to comment. These presentations gave me an opportunity to get responses and discuss the results with teachers at all school levels and that has also enhanced my data analysis process and increased the trustworthiness of my findings and interpretation. My supervisors both at the University of Exeter and University of Iceland also gave me a very valuable critical feedback during the whole research and writing up process of my thesis.

I based my theoretical interpretations on activity theory (Engeström, 1999b, 2001, 2007b) but my aim was also to generate my own professional theoretical understanding of the action research in Sjárvarsíðuskólinn and how I can improve my practice regarding enhancing the professional development of the staff in

Sjávarsíðuskólinn (Ingvarsdóttir, 2004; Whitehead & McNiff, 2006). My professional theory is grounded in the data and my relationship with the participants in the action research group (Charmaz, 2006, p. 130). I view and evaluate my theory in the light of the activity theory. At the third level I try to connect together my data analysis from the Change Room and the case study of the action research projects.

An overview is provided in Figure 8-1 of the four main components or steps of my data analysis process, firstly data collection, secondly data reduction, thirdly data conclusions and verification and fourthly data display. There is also a list of the main working methods I used at each step of the data analysis process. This was an interactive process, each component influencing the others and the arrows in Figure 8-1 are to indicate that.



(Adapted from Miles & Huberman, 1994)

Figure 8-1 Overview of the four components of data analysis

8.4.2 The evaluation of the Change Room

The outcome of Change Laboratories can be judged in three ways according to Cole and Engeström (2007) and Engeström (2010). Firstly, it can be judged by their practical outcomes i.e. actual changes in the practice. This can relate to all

the different parts of the activity system, subject, object, tools, rules, community and division of labour (Cole & Engeström, 2007). Secondly, it can be judged by “the transformation over time in the quality of discourse within the community of practitioners” (Cole & Engeström, 2007, p. 495). Thirdly, the outcome is judged by the formation of new theoretical concepts that have been implemented and developed by the practitioners (Cole & Engeström, 2007). Engeström has stressed the importance of theoretical concepts grounded in the practice:

Concepts and their meanings develop and evolve in settings of practice and are maintained in practices because they are useful in conducting the community’s activities (Hall and Greeno, 2008, as cited in Engeström, 2010).

The expansive concepts need to be “material anchoring” in the practice i.e. written down in a useful way, for example in a pamphlet and implemented and actually used in practice and developed further by the practitioners (Engeström, 2009b, 2010).

I applied these three ways described above to judge the outcome of the Change Room in Sjárvarsíðuskólinn. Firstly by looking at the practical outcome of the action research projects to enhance learning, for example changes in teaching and assessment methods and changes in teacher–student relationship. Secondly, by looking at changes in the discourse of the action research group at the meetings in the Change Room. Thirdly, by developing new concepts about the changes that took place in the teaching practice in Sjárvarsíðuskólinn and a new concept the Change Room for this new way for professional development for teachers i.e. combining activity theory and action research. Fourthly I judged the outcome of the Change Room by analysing the evaluation of the participants themselves. The evaluation took place at the end of the Change Room with a survey in May 2011. One of the most important outcomes of the Change Room was an increase in participants’ agency to change their practice through action research. Part of that agency was related to the active involvement and responsibility of the participants in the research process and it was also related to the effect of the second stimuli of the double stimulation i.e. the interpretation of the research findings as pictured in

the activity system of the classroom and based on concepts derived from the activity theory. Therefore it was important that the participants themselves took an active part in evaluating the research process as well as the research findings.

Virkkunen and Newnham (2013) describe similar ways to evaluate the Change Laboratory as Engeström and Cole when they evaluated a Change Laboratory in a secondary school in Botswana. However they also add one more way of evaluation i.e. to evaluate the “knowledge and understanding of the developmental challenges and possibilities of the activity in question” (Virkkunen & Newnham, 2013, p. 159). This will be done in chapter 10 though a description and discussion of the main changes from the past to the present and the main tensions in the activity system of Sjávarsíðuskólinn.

8.4.3 Transferability and theoretical generalization

The findings are not generalizable in the traditional sense of the concept within the positivist paradigm but they are generalizable in the interpretive meaning of being transferable to similar circumstances or settings (Evans, Lomax, & Morgan, 2000). The findings are transferable to other action researchers in schools who are facing similar tensions in their practice and can use the findings as their second stimuli in a double stimulation. Additionally the findings are transferable as a new methodological instrument for professional development that connects together action research and activity theory.

The aim is also to create theoretical concepts that can be used in teaching practice. The theoretical concepts will be developed from a concept, a “germ cell” that will describe the essence of the changes made in the practice and reflect the tensions that the teachers are facing in their classroom practice. The term is from Karl Marx who analysed the form of the commodity value as the “cell” of capitalist society and Vygotsky pointed out that Marx “discerns the structure of the whole social order and all economical formations in this cell” (Vygotsky, 1997, p. 320 as cited in Engeström, 2009a, p.326). Engeström (2009a) maintained that the “cell” or what he terms the “germ cell” is the basis for theoretical generalization:

A genuine theoretical generalization is thus based on a “cell” that represents a complex system in a simple, “pure” form. Such a cell retains all the basic characteristics and relationships of the whole system. It is also an ever-present, common part of the whole (Engeström, 2009a, p. 326).

The “germ cell” has the following four main characteristics:

- (a) the germ cell is the smallest and simplest initial unit of a complex totality;
- (b) it carries in itself the foundational contradiction of the complex whole;
- (c) the germ cell is ubiquitous, so commonplace that it is often taken for granted and goes unnoticed;
- (d) the germ cell opens up a perspective for multiple applications, extensions, and future developments (Engeström, et al., 2012, p. 289).

The idea of developing a theoretical concept from a germ cell is built on Davydov’s method of “ascending from the abstract to the concrete” that describes a similar sequence of learning actions as in the expansive learning cycle by Engeström described in section 5.3 (Engeström & Sannino, 2010). According to the theory of ascending from the abstract to the concrete the germ cell is gradually transformed into a theoretical concept that depicts a new object i.e. a new form of practice that leads to changes in all the elements of the activity system (Engeström & Sannino, 2010). The new concept then needs “material anchoring” into the practice and to be developed further by the practitioners themselves in their practice (Engeström, 2010).

In the next part I will report on the findings of the study in the Change Room. In chapter nine I will give a description of the participants and the process of the expansive learning cycle in the Change Room. In chapter ten I look back at history to find out how the participants experienced the main changes and main tensions from the past to the present in Sjárvarsíðuskólinn. In chapter eleven I describe the process and outcome of individual action research projects in the classroom, the tensions they experienced in classroom practice and their attempts to solve these

tensions and make changes in practice. In chapter twelve a view of the action research group in the Change Room is provided, the participants' evaluation, the tensions in the group, their modalities of learning and development of their agency in the Change Room. Part of the discussion on the findings is embedded in the finding chapters as it was best to make direct links there to appropriate concepts and ideas from the literature in order to enhance the understanding of the findings.

PART IV: FINDINGS

9. THE CHANGE ROOM – THE PARTICIPANTS AND THE PROCESS

9.1 Participants in the Change Room

The action research group that participated in the Change Room for two school years from autumn 2009 until summer 2011 included 21 practitioners and an outside consultant from the University of Iceland. In the group there were 18 teachers, 1 students' counsellor and 2 school leaders. There was a self-selection of participants in the group; the school advertised for new members and the school leaders in the group and the group leader encouraged teachers to join the group. In the first year there were 18 participants and in the second year there were 17 participants. Four participants left the group after the former year, one quit working at the school and started teaching in another school, one went on a paid study leave and two decided to leave the group although they continued teaching in Sjárvarsíðuskólinn. One felt he did not have time because he was writing a textbook in his teaching subject and one because he felt my research had too much influence, I was directing the work too much and it took up too much space in the action research group (Conversations and e-mail with participants in May and June 2014). In the second year 3 new members began in the group, one came back from a maternity leave, one came back from a paid study leave and one new teacher joined the group who began teaching at Sjárvarsíðuskólinn that year. In both years there were 26% of staff members in Sjárvarsíðuskólinn who participated in the Change Room.

Women were in a great majority in the Change Room. Of the participants, 15 or 71% were women and 6 or 29% were men. This is not a representative proportion between the sexes in the school if we look at the whole staff group in Sjárvarsíðuskólinn in 2010 when there were 37 or 54% women and 31 or 46% men.

The participants in the Change Room teach 10 different subjects in Sjárvarsíðuskólinn, Biology, Chemistry, Citizenship, Danish, English, Geology, History, Icelandic, Mathematics and Physics. Figure 9-1 shows the number of participants teaching each subject. The students' counsellor is teaching an optional

course in learning methods for students with dyslexia or dyscalculia. There are in total 17 teaching subjects in the school in 15 subject departments.

In all teaching subjects most of the participants have been the head of the department either presently or in the past. Two of the participants occupied the roles of the professional leaders in the school and two participants were former professional leaders and one of them had also an experience of being the deputy head teacher of Sjárvarsíðuskólinn for over 10 years. This indicates that the individuals participating in the group were professionally influential within the school.

Teaching subject	Number
Biology	2
Chemistry	2
Citizenship	1
Danish	2
English	2
Geology	1
History	1
Icelandic	3
Mathematics	3
Physics	1
School leaders	2
Students' counselling	1
Total	21

Table 9-1 Teaching subjects of participants in the Change Room

The educational level of the participants in the Change Room was very high, three of the participants had doctoral degrees, thirteen had master's degrees and five had bachelor's degrees, so 76% of the group had further education after BA/BSc degrees in 2009-2010. This is especially high compared to the educational level of employees in general in secondary schools in Iceland as only 21% of them had further education at university level. In Sjárvarsíðuskólinn the educational level was relatively high as 52% of all the employees had a further education at university level.

The distribution of year of birth of the participants in the Change Room is shown in Figure 9-1. The range was from 1945 to 1983 with the average of year of birth

1960 or fifty years old. The average age, fifty years old was the same for the staff group as a whole in Sjárvarsíðuskólinn in 2009.

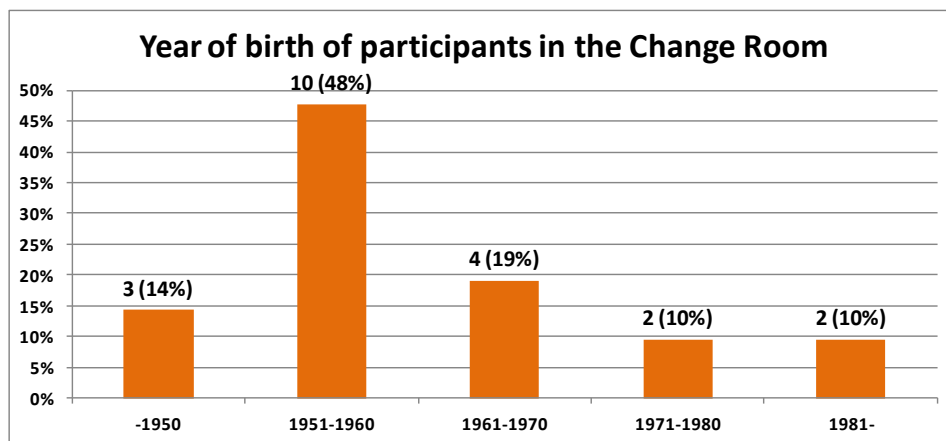


Figure 9-1 Year of birth of participants in the Change Room

The participants have very varied working experience in Sjárvarsíðuskólinn or from 0 to 24 years as shown in Figure 9-2. It should also be noted that our outside consultant has over 20 years of teaching experience in Chemistry at Sjárvarsíðuskólinn prior to start working at the University of Iceland.

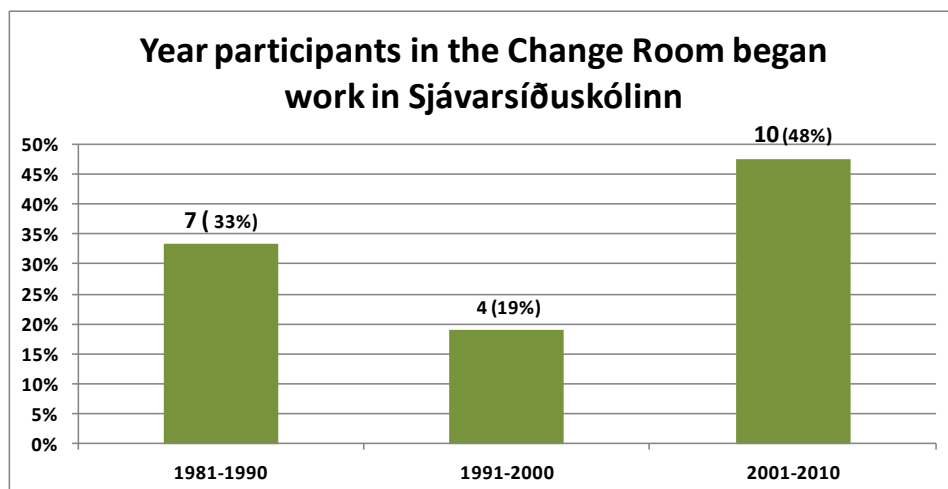


Figure 9-2 The Year participants in the Change Room began work in Sjárvarsíðuskólinn

This does not give an overall picture of the teaching experience of the participants because half of them had teaching experience when they started working in Sjárvarsíðuskólinn, mostly in secondary schools but two also in primary schools and two also in universities. A few of them reported, in the pair interviews about the

past of Sjárvarsíðuskólinn, that they brought with them a working experience in other fields for example at laboratories, social services and health services. The youngest three participants came directly from finishing their teaching qualification at the University of Iceland or finished it during their first year of teaching at Sjárvarsíðuskólinn. They discussed bringing into their practice from their studies, pedagogical knowledge and new ideas about teaching and learning, from their studies. The participants also discussed bringing different attributes, special knowledge and personal traits, with them in their teaching at Sjárvarsíðuskólinn. Two brought knowledge and skills on the information technology, three brought special emphasis in teaching i.e. on oral competence, students' presentations and computer programs. Four discussed the importance of their positive personality in communications with the students, two their personal interest in the students and one the ability to be quick to analyse who needs help. All these qualities the participants brought with them in Sjárvarsíðuskólinn relate to the object of work i.e. the teaching practice, being able to enhance the learning of the students.

The Change Room was a special project of the action research group in Sjárvarsíðuskólinn from 2009 to 2011. As described in the introduction the action research group began its work in 2005. Of the participants in the Change Room 10 had been in the group from the start in 2005, 2 joined the group in 2007, 4 in 2008, 4 when the Change Room began in 2009 and 1 in the latter year of the Change Room in 2010. Therefore two thirds of the participants were familiar with action research and had already been trying out making changes in their practice through action research and some had already begun working on a certain topic when the Change Room began and continued their work with that. Half of the group members also had experience of presenting their findings at meetings and conferences; three writing about their projects in teachers' professional journals in Iceland and one had done an action research project in Sjárvarsíðuskólinn for her master's degree. Therefore the participants had varied experience of the meetings in the action research group. When I refer to individual participants in the Change Room I will provide information about their pseudonym and in brackets their age, teaching subject and their teaching experience in Sjárvarsíðuskólinn, for example, Jónas (40+ Mathematics 11).

I will now turn to describing the meetings in the Change Room. First I will describe the frame of the meetings and then the content by explaining how the group went through the expansive learning cycle in the Change Room.

9.2 The frame of the meetings in the Change Room

A total of 19 meetings were held in the action research group during the Change Room and one follow up meeting where the findings were presented and discussed. The group leader of the action research group decided the timing and the program of the meetings in cooperation with the deputy head teacher and the outside consultant. Meetings were at set times for staff meetings either in the morning or afternoon. Morning meetings lasted for about one hour in between classes. Meetings later in the day, held after classes or exams, were about two hours long. A total of 11 short meetings and 8 long meetings were held in the Change Room. Shorter meetings were held in a special meeting room but longer meetings were held in a classroom that is more spacious and better equipped for Power Point presentations.

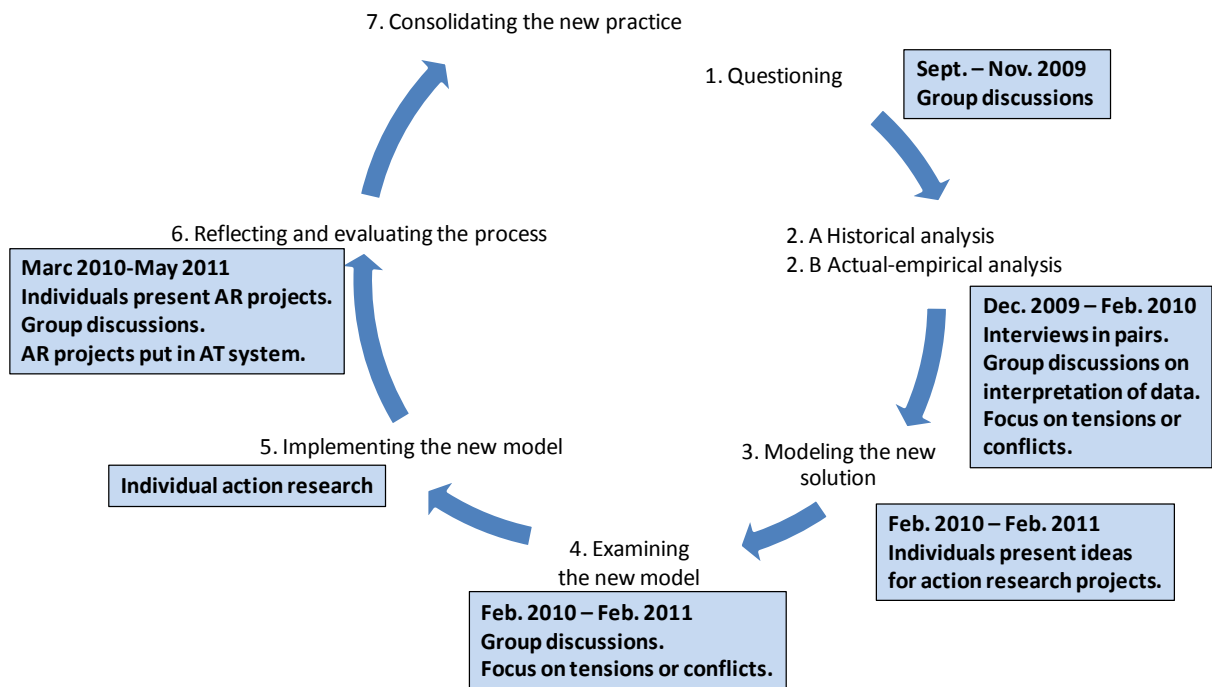
Participants' attendance varied between meetings, on average there were 15 participants at the meetings. The outside consultant was present at all the meetings except one.

All the meetings were audio recorded and two recording devices lay on the meeting table for that purpose. Most meetings were also video recorded and a video camera was placed at one end of the meeting table in the room. The recordings were transcribed and used as data for the group members. The purpose of that was to use this material as the first stimuli in the expansive learning process i.e. to enhance individual and collective learning of participants, give them an opportunity to read it over and make comments either in e-mail or at next meeting if they thought that something needed clarifying or explaining and to inform those who were unable to attend a meeting. Photographs were sometimes taken of the action group members at the meetings and used in presentations of the findings of the Change Room both at meetings in the school and at meetings and conferences outside the school. One of the participants, the group leader, directed the meetings and started each meeting by introducing its agenda.

Now I turn to describing the agenda or the content of the meetings of the action research group in the Change Room. I will introduce how the discussions and presentations at the meetings lead the group through the expansive learning cycle in the Change Room.

9.3 The expansive learning cycle in the Change Room

Following Engeström (2001, 2007b), if changes or transformations in the workplace as an activity system are going to happen, the staff group needs to go through the expansive learning cycle together and changes take place from action to activity or from individual actions to activity on systemic or community level. In Figure 9-3 it is shown how the group approached each step of the expansive learning cycle but each step can be viewed as an expansive learning action (Engeström & Sannino, 2010; Virkkunen & Newnham, 2013). At the first step, the need for changes is accepted. At the second step, the group looks at the history of the practice in the workplace and what tensions or conflict they are confronting in the workplace. On the third step, the participants put forward ideas about changes they want to make in their practice and at the fourth step, these ideas are developed further and tried out on the fifth step. On the sixth step the new working method is evaluated and reflected on and at the final step the new working method is confirmed and introduced to others in the workplace. In the Change Room the aim was for the action research group to go together through the expansive learning cycle as is shown in Figure 9-3. It is necessary to move between action and activity in the expansive learning cycle i.e. the point of view of the individual action and the point of view of the activity system of the classroom when using the activity system as a unit of analysis (Engeström & Miettinen, 1999).



(Adapted from Engeström, 2001, 2007b).

Figure 9-3 The expansive learning cycle in the Change Room.

In the blue boxes the time line is shown of how the group went through the cycle in the Change Room from 2009 to 2011.

The timeline of our journey through the steps of the expansive learning cycle in the Change Room will now be described and how the material of the action research projects and discussions at the meetings were used at three sets of surfaces in the Change Room i.e. “mirror”, “model” and “ideas”. The “mirror” serving as the first stimulus and the “model” serving as the second stimulus in the expansive learning process (Engeström, 2007b; Sannino, 2011). This was explained in general in section 5.4. In the Change Room the participants’ introductions of ideas of action research projects, discussions on problems faced in the classroom, participants interviews about changes from the past to the present and presentations of individual action research projects at the meetings was used as material in the “mirror”, serving as first stimuli in the learning process. This included various information about classroom practice both in descriptions and figures, students’ views and students’ products. The conceptual framework of the activity theory, the

focus on tensions and the use of the triangular model of the activity system of the classroom to visualize individual action research projects was used as material in the “model” serving as second stimulus in the expansive learning process. The participants in the Change Room may also have used other theoretical material as a second stimulus in the learning process as part of their individual action research projects as will be discussed later in the thesis. All the new teaching, learning and assessment methods and other new ideas of changing the participants’ practice were used as material in the surface of “ideas” in the Change Room and these were put under tools when individual action research projects were visualized in the activity system of the classroom.

1. Questioning

From September to November 2009 there were general discussions about the present teaching practice where the participants confirmed that we were all questioning our practice and on the need stage of wanting to make changes in our practice. The overall aim of the project was to find new ways to increase the students’ sense of responsibility for their learning in Sjárvarsíðuskólinn. At this point I also presented activity theory to the group, i.e. “model”, a set of surfaces used in the Change Room, to serve as the second stimulus to enhance the expansive learning process. The participants received a 5 page handout with a description of the proceedings in the Change Room and a short introduction of the activity theory.

2. Historical analysis

Historical analysis helps the participants to better understand the present in light of past history and helps them to trace the historical roots of the tensions in their present practice through analysing the former development of the practice (Engeström, 2008a; Sannino, 2008). It is also important to be able to take into account and consider past events in the school when planning changes in the practice. Sannino (2008) pointed out that Change Laboratories have generally focused on the history of the institution rather than on the participants personal history of work but she considers both historical perspectives needed. I tried to link these two together in the Change Room by directing the discussion about the changes from past to present both at the development of the school and the

participants experience of that development. In December 2009 the participants interviewed each other in pairs about the changes in Sjárvarsíðuskólinn from past to present, see questions in Appendix 6. This was the first material put in the set of surfaces called the “mirror” serving as the first stimulus in the expansive learning process. In February 2010 I gave them the transcriptions of their interviews and my interpretation of the interviews by using Engeström’s activity system framework and identified tensions within the activity system of the school serving as the second stimulus in the expansive learning process, see description in chapter 10. In February 2010 we also had a discussion about the findings both in small groups and the group as a whole. At that meeting the group decided it was best to use the term “togstreita”, and I translate as a tension, for the manifestations of contradictions they experienced in classroom practice (Meeting, 4. 2. 2010).

At a meeting in October 2010 I presented my interpretation of the findings about the changes from past to present to the group and we discussed my findings. It was for example pointed out by participants that I had not been able to include all the changes that were discussed in the interviews. I had included factors that had not changed and I had included some changes that had not yet taken place, especially the Secondary School Act from 2008 that will be implemented in 2015, because this had already had great effects on secondary school teachers.

Jónas (40+ Mathematics 11) explained:

The trouble is to deal with things that do not become reality but have great influence on the discussion. We have been constantly struggling since 2003 because of the discussion of the shortening of the secondary school because at the beginning it was all about cuts (Meeting 6.10. 2010).

3. Modelling the new solution

In February 2010, October 2010 and in February 2011 all the participants introduced their ideas about changes in classroom practice i.e. the action research projects they were planning or already working on. This material was in the third set of surfaces in the Change Room i.e. “ideas” of the future that were intended

plans of actions or plans in progress. In choosing what changes to make in their practice the participants often based their decisions on the tensions they were experiencing in their classroom practice. This will be described further in chapter 11 but here is one example.

Mist (50+ Icelandic 22) explained her change in teaching methods by pointing at a tension regarding the coverage of lesson material:

This winter I am going to change the methods in the history of literature in the fourth grade, there is tension as there is a lot of material covered but I doubt that a lot of it really lasts. Group work, ... in a care home for the elderly ... The aim is to bring generations together and do this more alive in order to create a reality, something different from this stone dead schooling (Meeting 6. 10. 2010).

Alternatively Sandra's (40+ History 20) action research project is influenced by her collaboration with teachers in Europe who are putting emphasis on students' active learning:

I am looking at students' activity and methods and collecting material that will be partly interactive and I will try that out this winter. I am participating in a European collaborative project with History teachers. The project that we are developing is called "Historiana". I am in a group that is working with a theme called "Rights and Responsibility" (Meeting, 6. 10. 2010).

In all cases it was the participant's decision which changes were made in classroom practice and it was based on their individual values, preferences and ideas with the groups' aim in the background of finding ways to enhance his or her students awareness of and responsibility towards their learning. It was not necessarily based on literature or research results on the best changes to make in each case. Some participants based their decisions on the experience of other participants in the group or other colleagues in Iceland or abroad. Some participants based their decisions on their experience of learning through the action

research process for example the use of students' diaries. Some participants based their decisions on pedagogical literature introduced by our outside consultant for example the use of dialogue in teaching, or literature that they had learned in their teacher training for example the ideas of cooperative learning or in continuous educational courses for example the use of portfolios for assessment. These theories and ideas enhanced the action research cycle of the participants and may also have served as an additional second stimulus for some participants in the expansive learning process. The modalities of individual and collective learning of the participants in the Change Room will be discussed further in chapter 12.

4. Examining the new model

The group and the outside consultant responded to the ideas and the focus was sometimes on the tensions teachers were experiencing in classroom practice. Here is one example where the focus is on the tension between deep learning and the coverage of material:

Nanna (50+ Biology 0) introduced her ideas of new assignments for the students:

I have been preparing cooperative learning assignment and I have already prepared a learning game to let them play and I have been thinking about dramatic expression of the blood circulation system. But I see that I just don't move forward with the material. ...

Rakel (40+ Icelandic 4) responded:

You often experience that when you try to move from the lecture method then your coverage of the material slows down (Meeting, 24. 2. 2011).

5. Implementing the new model

During a two years period, from autumn 2009 to May 2011, each participant in the Change Room carried out an action research project with the aim of finding ways to enhance his or her students' awareness of and responsibility towards their learning. The aim was that each teacher went through the action research cycle of observe, reflect, act, evaluate and modify. Some of the participants went through

the whole research cycle, some half or part of the cycle and some only introduced their ideas in the Change Room. An overview of the individual action research projects will be provided in section 11.2, two projects will be described in details in sections 11.5.1 and 11.5.2 and description of other projects are in Appendices 12.1 to 12.13. The focus will be on linking the tensions that the teachers experienced with the changes they made and/or their planned changes in their classroom practice.


6. Reflecting and evaluating the process

From March 2010 to May 2011 individuals presented their action research projects at group meetings in the Change Room. Eighteen group members presented their projects at the meetings. These presentations were material in the “mirror”, serving as a first stimulus. My role was to transcribe the meetings and visualise the action research projects in the activity system of the classroom from the perspective of the teacher as the subject. The outcome of that work was presented to the teacher and the group at the next meeting and sometimes discussed by the group. That was material in the “model”, serving as a second stimulus. Action research projects of eighteen participants were presented at meetings in the Change Room. Of those three participants who did not present their projects at meetings in the Change Room, two presented their projects at other meetings within the school and one had presented her project just before the Change Room began and continued to work on the same project during the Change Room. These three presentations were not used as data in my analysis of the action research projects in the Change Room.

At a meeting in February 2011 the group discussed the use of the activity system of the classroom to visualize two of the action research projects of Rakel (40+ Icelandic 4) and Jónas (40 Mathematics 11) in the activity system of the classroom.

Rakel: I find it very enjoyable to see it like this. Dagmar: Very smart. Hafþór: What do you say Jónas? Jónas: Very much so. I need though more time to consider this. Are the subjects perhaps more than just the teacher? I am not sure. I think this is great. Very enjoyable analysis of the tensions in the system. Very smart, I am

very pleased. Hafþór: Very smart to see so many threads together in one picture. Jónas: Very good to create a schema for many variables. Rakel: This works similar as mind maps. Dagmar: Yes, exactly. Mist: This is a direct methodology to mirror our practice but perhaps I don't need to say it, but it has rather unpleasant effects on me, especially the triangle and the arrows up and down, I don't have this thinking in me. ... Dagmar: I agree with Rakel, I see this as a mind map because in some kind of pictorial form but I also understand that this has unpleasant effects because these are aggressive picture form, spear, caution and danger. Question if it is possible to make the forms softer? Petra: It is perhaps possible to find another symbol for tensions other than the lightening, some flowers? Dagmar: Pictures influence us, on the emotional spectrum. Elísabet: Perhaps a spiral? Jónas: Should the flowers not rather be seeds? Actually I think that these are really beautiful shapes for me and do not shock me. ... People who have an interest in pictures can change the picture so we would have some flower and some form that is not aggressive. The only thing one can do is to recreate it with forms that you are equally found of. Finnur: Can I then ask for roses and thorns (Meeting 3. 2. 2011).

Here we can see how people's attention is directed at the tensions and also how they link the picture of the activity system of the classroom to a mind map, a tool they are familiar with. This can be viewed as their way of transferring knowledge in order to understand better the conceptual framework of the activity system. Different opinions are expressed here regarding the symbol for a tension and I think that demonstrates the participants' engagement in the learning process of using the activity system of the classroom. In order to value these ideas of changing the symbol for a tension and increasing their ownership of the pictures I used in the next pictures a soft colourful symbol  for a tension. But later some participants asked if I could change back to the original symbol so I started again to

use that and decided in the end to use in the thesis the lightning \longleftrightarrow as a symbol for a tension as was originally used by Engeström.

7. Consolidating the practice

We were just arriving at this step in the cycle at the end of the Change Room in the spring of 2011. The action research group comprises about 30% of the staff group and has just started to introduce their new working methods to the whole staff community. At a general teacher meeting in October 2010 we had small group discussions on active learning and the summary of that, see Appendix 12, was introduced and discussed at a meeting with the heads of subject departments in the beginning of 2011. From this summary one can see that the teachers' group has a similar understanding of active learning as the action research group in the Change Room but of course they also took active part in the discussion and influenced it. Introduction and discussions are the first step but that work is not finished and we have yet to see how many teachers will try them out and which of the new working methods will prove successful in the long run at system level. In other words we are yet to see which of the actions the participants took to change their practice will lead to transformation of the activity system of the classroom in Sjávarsíðuskólinn. The data indicates system changes on a small scale i.e. within some subject departments and the provision of optional courses but further research is needed to confirm it and this will be discussed further in the discussion.

The process of going through the expansive learning cycle is not a linear one and not as straight forward as described above. At the nineteen meetings in the Change Room and one follow up meeting, the group moved back and forward between the steps in the expansive learning cycle. In Table 7-2 is an overview of all the meetings in the Change Room with a list of the main content and discussion topics at each meeting. At the meetings, the individual and collective learning process is through the conversations between the participants and the outside consultant "a multi-voiced dialog in which the participants learn from each other" as Virkkunen and Newnham (2013) describe it. The modalities of individual and collective learning in the Change Room will be discussed further in chapter 12 in the thesis but an overview of the expansive learning actions in the Change Room is given in Table 9-2.

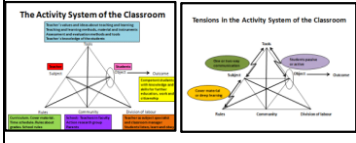
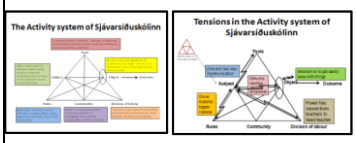
	Model	Ideas	Mirror
Future		Situated pedagogy of participative students' learning.	Participants presentations of action research projects. Whole group discussions on participants' presentations.
Present		Main tensions in classroom practice at present identified. Introductions of action research projects about changes in classroom practice around various students' active learning assignments and different ways to listen to students' voices.	Participants introductions and presentations of action research projects. Small group and whole group discussions.
Past		Turning points from past to present identified. Main changes from past to present in school identified. Main tensions from past to present in school identified.	Pair interviews about the main turning points and the main changes from past to present in the school. Small group and whole group discussions.

Table 9-2 Overview of the expansive learning actions in the Change Room.

Going through the expansive learning process described here above is a collective process where both individual and collective learning takes place. A double stimulation drives the learning process (Engeström, 2007b), the first stimuli being the data from the participants' action research projects and discussions at the meetings in the Change Room and the second stimuli the activity theory and the action research projects put into the conceptual framework of the activity system of the classroom. The double stimulation enables the participants to use outside resources to influence their learning process and thereby their behaviour (Sannino, 2011). The intended outcome of expansive learning is the participants' ability and will to shape their learning and agency to change their practice (Sannino, 2011). The main departure of the Change Room from the Change Laboratory is firstly that the material used in the "mirror" comes directly from the action research projects of the participants themselves but not from outside researchers and the participants decide individually what changes to try out in their practice of the surface "ideas" but are not implementing a change in practice at school system level.

I will now describe the outcome of the Change Room, on individual and group level. Firstly, I will describe the main changes from the past to the present and the main tensions in the activity system of Sjúvarsíðuskólinn. Secondly, I will describe the individual action research projects, the main tensions the participants

experienced in their practice in the activity system of the classroom and main changes the participants made in their practice in attempting to solve these tensions. Thirdly, I will describe the action research group as an activity system in the Change Room, how the participants experienced the Change Room, the tensions they experienced in the action research group, the individual and collective learning processes in the Change Room and the development of agency to change and cross curriculum agency. I will begin by describing the turning points from the past to the present in the activity system of Sjárvarsíðuskólinn and analyse the main changes in Sjárvarsíðuskólinn from past to present by using the conceptual framework of the activity system.

10. THE CHANGE ROOM - MAIN CHANGES FROM PAST TO PRESENT

10.1 Glimpse from the past

Here I will present the main changes from the past to the present in Sjárvarsíðuskólinn from the point of view of the participants in the Change Room. Their views were expressed in interviews with each other in pairs about the past, see questions for interviews in Appendix 6, and discussions at group meetings about my summary of the outcome of these interviews. As described before, for some participants the past was one year of experience working in the school but for others much longer, 10 to 20 years and a few over 20 years. In total 18 participants participated in the interviews about the main changes from the past to the present.

In order to increase the participants' understanding of the problems and potentials of classroom practice in Sjárvarsíðuskólinn we need to look at its history. The purpose of looking at the past and the development of Sjárvarsíðuskólinn is for the participants to get the tensions they are experiencing in their practice on the surface and to be able to take notice of these historical factors and the tensions when deciding on changes in classroom practice through their action research projects. Following Engeström, historicity is one of the principles in the activity theory as it is through the study of the history of the activity system that one can learn about its tensions, contradictions and potentials for transformation.

(Engeström, 2001). The historical analysis may be a useful tool to develop expansive agency for change among the participants in the Change Room as the process of looking at the changes from the past to the present will reveal tensions in the practice and enable the participants to focus on what changes are most needed and wanted in the practice.

10.1.1 Turning points from the past to the present

The participants were asked what they considered to be the turning points on the road from past to present in Sjárvarsíðuskólinn. A turning point refers to a clear change at a certain point in time that leads to development within Sjárvarsíðuskólinn as an activity system. Turning points were divided into main changes that were caused by factors outside Sjárvarsíðuskólinn i.e. influence from other activity systems and main changes caused by factors inside the school i.e. changes within one of the elements of the activity system of Sjárvarsíðuskólinn that influences other elements within the activity system. At a meeting in October 2010 it was discussed that there are many ways to classify changes. Hafþór, the outside consultant explained that there are many changes, written and unwritten, visible and invisible, material and spiritual (Meeting 6. 10. 2010). The main reasons for my choice to group the changes as either caused by factors outside or inside the school are because at first I was really surprised to realise how little change was initiated at system level within the school without outside pressure, and this distinction is appropriate in order to draw the attention to connections between cultural changes and political power.

The main factors outside the school were laws and regulations, teachers' salary contracts, technical revolution and the recession, see Tables 10-1 and 10-2. The main factors viewed as turning points inside the school were changes in assessment, housing, head teachers and the introduction of action research, see Table 10-3.

Legislation	<ul style="list-style-type: none"> •The Upper Secondary School Act 1996 •The Legal Age Act 1997 •The Central Curriculum 1999 •The Upper Secondary School Act 2008
Teachers salary contracts	<ul style="list-style-type: none"> •1997 •2001
Technical revolution	<ul style="list-style-type: none"> •Computers •Projectors •Internet •Central Information System "Inna"
Recession	<ul style="list-style-type: none"> •Less fundings •More centralization

Table 10-1 Turning points - Main outside factors influencing changes from the past to the present

The Upper Secondary School Act 1996	<ul style="list-style-type: none"> • Power moved from teachers to head-teacher • School independence increased • Self evaluation started
Teachers Salary Contract 2001	<ul style="list-style-type: none"> • Power of the Head of Faculty reduced • Pay negotiation partly moved into College • Teachers' effectiveness connected to pay
Technical Revolution	<ul style="list-style-type: none"> •The school's Intranet •The digital whiteboards •The computer conference room
Resession	<ul style="list-style-type: none"> • Extra class-time for science laboratories abolished • Larger classes • Project management reduced

Table 10-2 Turning points - Examples of influence of external changes.

Assessment	<ul style="list-style-type: none"> • A system for students to skip exams abolished • Fewer large final exams • No oral exams and no outside examiners except in languages • Continuous assessment increased
Housing improvements 2002-2007	<ul style="list-style-type: none"> • Four new classrooms • Teachers' working conditions improved • Students' working conditions improved • A new meeting room • A new conference room
Head-teachers	<ul style="list-style-type: none"> • New head-teachers in: • 1987 • 1996 • 2001
Action research	<ul style="list-style-type: none"> • Started in 2005

Table 10-3 Turning points - Main inside factors influencing changes from the past to the present

It is my conclusion that the participants seemed to think that factors outside the school were much more influential on the school's development than factors inside the school because the outside factors are mentioned more often and their influence is also discussed in more detail. The most frequently discussed were changes in laws and regulations about the secondary school level. Examples of these are power removed from teachers to head teacher, increased independence of upper secondary school and the introduction of schools' self-evaluation following the Upper Secondary School Act of 1996 and centralization of all school subject course descriptions in the Central Curriculum for secondary schools of 1999. This development of increased school independence at the same time the centralization of the school curriculum for secondary schools created a conflict and the tensions experienced by the teachers bring this conflict to the surface as will be explained further in the next section.

This emphasis on outside factors influencing school development resembles findings of other studies both in Iceland (Thorkelsson, 2008) and in other countries (Edwards, 2008; Fullan, 2007; Sannino & Nocon, 2008). Edwards (2008) has pointed out that clear changes have occurred within the educational system in England during the last twenty years. New tools have led to changes of roles and division of labour that have been forced on the schools through outside evaluation,

financial provision and the need for schools to be competitive. These changes come from outside and cause disruptions within the activity systems of the schools.

Now I turn to analysing the main changes in Sjárvarsíðuskólinn from past to present by using the conceptual framework of the activity system. I describe the main changes from the past to present as to which element in the activity system of Sjárvarsíðuskólinn the change is related to. Here the teacher is the subject and the learning of the students is the object and the changes are presented from the point of view of the subject, the teacher.

10.1.2 Subject

Fourteen of the participants in the Change Room see themselves as having gradually developed their confidence in teaching with increasing age. They are the older ones and describe their confidence as having more patience, flexibility and understanding towards their students. Fifteen participants express the changes in themselves through changes in the relationship with their students. Here are two examples that describe that.

Gunnar (50+ Mathematics 21) explains:

In organising my teaching I have changed more and more from being a teacher into becoming a facilitator i.e. working more with feelings, fear, self-esteem, working modes, learning how to learn, get them to read. I am teaching them very little, more trying to encourage them, encourage them to read more, group dynamic work with them. ... I feel I have changed. I feel I am a better teacher (Pair interview about the Past 9. 12. 2009).

Sandra (50+ History 20) describes:

I think I reach students better today than before as strange as that may sound. By reach, I mean I think I understand them better today even though I think they are more difficult. ... I show interest in them, I think that is extremely important (Pair interview about the Past 9. 12. 2009).

How the teachers experience their professional change through changes in their relationship with their students is mirrored in the participants' emphasis on listening to students voices that will be discussed in chapter 11. This is also in line with research in Iceland that found secondary school teachers expressing it as the most important aspect of their work to be in good relations with their students (Ingvarsdóttir, 2004). In Ingvarsdóttir's study the most important thing for the teachers were good connections with the students built on respect and trust. "From their words one could conclude that this connectedness is a prerequisite for being a good teacher and that they feel good in their practice" (Ingvarsdóttir, 2004, p. 43).

10.1.3 Object

The object of an activity meets a certain accepted societal need and the object is what defines the real meaning of each activity system (Virkkunen & Newnham, 2013). In the activity system of schools with the teachers as the subject, the students learning activities is the object.

The general object of teachers' work is students - or more accurately, the relationship between the students and the knowledge they are supposed to acquire (Engeström, 2005, p. 385).

Therefore when looking at the object of students' learning we look at the performers behind the studying activity, the students. It is the student who is experiencing the learning in the classroom and generally within the school (Jarvis, 2006).

The fourteen older participants saw the group of students in Sjárvarsíðuskólinn as having broader learning capabilities than before, doing less homework, attending the school less than before, needing more discipline, more aware of their rights and making more demands of service from the teachers. This was explained partly by development of the information society, partly by changes in the intake of students into the school and also partly by increased class size that is discussed further under the element community.

Íris (50+ Danish 19) stressed the increased difference in the learning ability in the students group following changes in the intake of students in the school when she says:

The students group has changed a lot as we are no longer a neighbouring school and we therefore have more of less able students in the group and that means that we can't meet them where they stand as we could when we got all the more able students. But we can't do that anymore because now we also have students who only fulfil the minimum requirements in some subjects and that means that they are not all on the same footing (Pair interview about the Past 9. 12. 2009).

Magnús (60+ Physics 8) draws attention to the influence of the culture within the society and the school on the students learning when he says:

Some have called the group we are teaching today "the cute generation" (krúttkynslóðin). We have created a situation for them that is all embracing. Students don't sense that they need to take a stance where you pull yourself together and go to work. It is alright to be late, it is alright to goof off, it is alright to do nothing. It is alright to hand in assignments too late and then make demands on the teacher to bend according to their situation (Pair interview about the Past 9. 12. 2009).

It is clear that all except the four youngest participants have experienced changes in the students group and the cultural and social gap between the teachers and students seems to be widening. This is partly explained by the age difference between the teachers and the students, partly by the widening in the abilities in the students group and partly by the gap between the real experience at local time or "the meat world" and the internet world or "the net world" where people can chose their own time for connections, playing, acting, watching etc. This technical development has not only led to changes in social connections but also great changes in the tools teachers and students can use in the classroom.

10.1.4 Tools

The technical revolution is discussed by sixteen out of eighteen participants i.e. all but the two youngest ones. The older participants stress the great changes from chalk boards, pens and handwritten overheads to computers, projectors, the Internet and the school's intra net. The information technology is seen by the older participants as providing teachers with better working conditions, more teaching instruments and helping them to provide more varied teaching and grading methods and students with more sources. For example, technology provides dictionaries online and more possibilities for students listening and talking in foreign languages. Timetables for classes and exams, plans, notes, exercises and communication are more and more on the intra net of the school and Inna (Information system for secondary schools in Iceland) on the Internet; students are enrolled and billed online and summoned to meetings with counsellors and school leaders by e-mail or text messages instead of by notes or letters. However, the new technology is also seen by some of the older teachers as creating new time consuming tasks for them.

Íris (50+ Danish 19) says:

The school intra net has of course changed our work and increased it because it takes a lot of time to put all the material in the intra net if you really do it conscientiously. But it is worth it many times and students at least in the first year say they use it a lot. So it is really good (Pair interview about the Past 9. 12. 2009).

Many of the participants are sceptical toward this technical revolution of the school environment. The students are seen as relying too much on the Internet as a source and not knowing how to use it as such.

Sandra (40+ History 20) explains about the influence of technology on the students:

Yes I blame it on the information technology; they are somehow in another world. It [technology] is positive in many respects but it has also had negative effects on the students. Both that they are

dependent on finding something on the Internet, books are considered something negative, the Internet is good. They are stressed getting into the computers, getting on the phones (Pair interview about the Past 9. 12. 2009).

Lára (60+ English 17) points out another angle of the same issue:

...the students don't know how to use it [the Internet]. Then we are into the copy paste issue. How to use sources? How to present sources? (Pair interview about the Past 9. 12. 2009).

This is an issue that was also discussed at the group meetings and something teachers are dealing with in some of their action research projects.

10.1.5 Rules

Great changes in the activity system of Sjárvarsíðuskólinn are related to the element of rules and most of these are seen by the participants as caused by outside factors, namely new laws and regulations on the secondary school system, new curriculum and the Recession.

Eleven of the participants mention the Secondary School Act from 1996 that led to changes in the power structure in the school that will be described further under the element of division of labour and the introduction of the self-evaluation of schools that was pointed out as influential by four participants.

With the Secondary School Act from 1996 came the school's self-evaluation. All schools needed to put forward a policy about how it would carry out the school's self-evaluation on teaching, leadership, communication and outside connections (Alþingi, 1996). Guidelines from the Ministry of Education put emphasis on using both quantitative and qualitative methods in the evaluation process and that it would apply to all aspects of the school's work. It was also stressed that both staff and students should participate in the evaluation process and the results should be made public (Sjálfsmat skóla (School's self evaluation), 1997).

Mist (50+ Icelandic 22) describes the introduction of students' evaluation of teachers work:

One can also mention the introduction of quality assessment and that has been a growing aspect ... For example the students' questionnaires have been regular for almost 10 years and that has definitely made an impact on everybody that work here (Pair interview about the Past 9. 12. 2009).

Eleven of the participants mention the new Curriculum for secondary school in 1999 as an important change factor. With the new Curriculum came standardization of course descriptions and assessment, the introduction of new core subjects of Citizenship and Geology and older subjects such as Philosophy and Accounting were eliminated from the core.

However one participant had the view that this did not lead to great changes within Sjárvarsíðuskólinn except in assessment. Jónas thinks that there has been a surprisingly little change in Sjárvarsíðuskólinn except in students' assessment. When he started working in the school the major form of assessment was a four hour long final exam in the main subjects.

Jónas (40+ Mathematics 11) describes:

There have been system changes but there has not been great changes [in the school work] except that the time allocated for exams has changed a great deal. It was very long when I started. Students had a long preparation time for exams. Many final exams were in the fourth year of studies but not as now when students are taking their final exams over many years and even terms. It has changed a lot ... I think that the exam time has changed a great deal, one can actually say that (Pair interview about the Past 9. 12. 2009).

The changes made in assessment in Sjárvarsíðuskólinn is a system change that is largely initiated from within the school although in the background was the new Curriculum from 1999. These changes involve for example shorter final exams i.e. 2 - 3 hours instead of 4 hours, fewer final oral exams i.e. all oral exams were eliminated except in foreign languages and increase of continuous assessment.

Another change regarding the assessment system came from within the school but happened before these changes described above or in 1995 when the “Dropping system” was abolished but that system was only in Sjárvarsíðuskólinn and one expressed the opinion that it had been bad for the reputation of the school and that it had called for increased examination during the semester time, especially during the spring semester. But three mentioned that they missed the system and one felt it had created a culture for school attendance amongst the students and helped many to reach the minimum grade.

The New Secondary School Act in 2008 and the General part of the New Curriculum from 2011 has already influenced the participants in the Change Room and secondary school teachers in general even though the new laws and the curriculum will not be fully implemented until the school year 2015 to 2016. In Sjárvarsíðuskólinn the practitioners have been preparing the changes that have not yet been implemented as is discussed in Appendix 1.

The participants in the Change Room had been experiencing negative changes following the economic recession in Iceland in 2008 and eight mention that in their interviews. Negative changes are for example larger class size and a cut down of extra classes for experiments in sciences as Anna (20+ Biology 1) and Katrín (20+ Chemistry 2) point out in their interview with each other:

Katrín points out:

This is of course a very short time that we have been here but during this time we had a “Collapse” in the society, that is often mentioned and therefore great economizing. Anna adds: That has led to a cut down in teaching, especially in the classes for experiments in biology. Katrín adds: And also in chemistry (Pair interview about the Past 9. 12. 2009).

At this time some of the teachers were worried about the changes that were to be made in the autumn of 2010. Finnur (30 English 2) who took part in the experiment on the class based periodic system was very aware of these worries and shared them.

Finnur said:

All changes have influence, both positive and negative. I have told the school-leaders and some others that next year [2010-2011] will be very difficult, I think, from the teachers' point of view. Teachers will be bumping into things left and right... There will be a lot of confrontations next winter (Pair interview about the Past 9. 12. 2009).

The economic recession and the postponement and uncertainty surrounding the implementation of the Secondary School Act from 2008 has probably caused increased insecurity and anxiety as these examples above indicate.

This is confirmed in a quantitative study by Ragnarsdóttir (2012b) on job satisfaction, well being and work environment of upper secondary school teachers, students' counsellors and assistant school leaders in Iceland which showed that both job satisfaction and well being decreased from 2008 to 2012 (Ragnarsdóttir, 2012a, 2012b; Ragnarsdóttir, Matthíasdóttir, & Sigurðsson, 2010). In 2012 the practitioners' job satisfaction was high, 7.7 on average on a scale from 1 to 10 but it had decreased as there was an increase of 3% in teachers rating their job satisfaction as 5 or under. A decrease was also found in teachers' feelings of well-being between 2010 and 2012 as those who felt very well at work, physically, socially and mentally decreased by 5% (Ragnarsdóttir, 2012a). The study in 2012 also showed that 77% agreed that the service to the students had suffered from the economic recession, 64% of the practitioners agreed that they felt increased pressure at work because of the economic depression and 65% agreed that they felt pressure from increased size of students learning groups (Ragnarsdóttir, 2012a). Regarding influence on the teachers themselves 40% agreed that the existence of the new laws caused them stress (Ragnarsdóttir, 2012b).

10.1.6 Community

Eleven of the participants talk about the positive influence of the introduction of the action research group in 2005. The participants express the view that the action

research group increases discussions about pedagogy, willingness to try out changes in classroom practice and provides personal security.

Gunnar (50+ Mathematics 7) describes:

I feel a positive experience of a change in my work being in this group. I have been a member of the group for four years ... So if I compare it with the past I think it is a provider of vitamin that you can rely on, cross curriculum work with teachers from different teaching subjects (Pair interview about the Past 9. 12. 2009).

The working and influence of the action research group will be discussed further in chapter 12 in the thesis.

Other changes within the community that participants discuss having experienced are changes in staff members that seven participants mention i.e. within department or changes of the head teacher. Two of the younger participants mention introduction of a special mentor for new teachers and meetings for new staff members as a positive experience. Four participants mention increase of the department of students' counsellors and more parental cooperation.

Telma (50+ Learning methods 12), working in students' counselling indicates an increase in contact between the school and the parents and the contact is initiated both by the school and the parents:

First when I came here we never heard from the parents except when I got permission from a student to phone home for some reason. ... This has changed completely today. Parents are coming in from the time the students enrol and a lot of our work in the spring time is to talk to students and their parents about the school. ... Parents of students in the first year phone a lot, a lot of contact, many meetings (Pair interview about the Past 9. 12. 2009).

There is probably more willingness on both sides for increased cooperation between the school and parents after new laws, the Legal Age Act were passed in

1997 that moved the legal age of children from 16 to 18 years old. But it took a long time for the school to recognise this change. It was not until January 2009 a parents' board was founded in Sjárvarsíðuskólinn and parents got a representative on the political school board in Sjárvarsíðuskólinn in 2008. The new communication technology has also made the flow of information and communication a lot easier than before. However, some teachers recognise this parental collaboration as increased workload in their work as one of the participant pointed out.

10.1.7 Division of labour

The main changes in the division of labour in Sjárvarsíðuskólinn relate to changes in the power structure within the school but one can also identify a sign of the beginning of a change in the division of labour within the classroom between the teacher and the student.

Nine of the participants see more distance between staff and school leaders now than before and power moving from teachers to the head teacher. Legislation and trade union pay deals have removed power from teachers' representatives in formal boards such as the School boards and from teachers meetings and meetings of heads of subject departments. The Secondary School Act from 1996 led to the decreasing administrative power of teachers in the schools although they maintained their power within the classroom.

Sandra (40+ History 20) and Bjarki (60+ Danish 23) discuss the removal of power from teachers in their interview with each other:

Sandra says: Before teachers had two representatives with voting power in the School Board but now they only have one representative as an observer. Bjarki says: If a teacher meeting made a decision there was no turning back. Sandra replied: Then the teachers meetings had some power but it has not as much power nowadays (Pair interview about the Past 9. 12. 2009).

The school leaders are also aware of this change in the power structure.

Ingunn (50+ school leader 24) says:

I felt there was more democracy before, more even levelled management then but now a more narrow management. ... The meetings of the heads of subject departments were rather big, well attended and had more power, they were not always enjoyable, but it was a real power instrument (Pair interview about the Past 9. 12. 2009).

Íris (50+ Danish 19) says about the diminishing influence of the heads of departments:

The meetings were set within the school's timetable and in fact then there was more closeness with the school leaders because then we got a weekly overview of what was happening and what lay ahead. ... This was a forum where we could discuss matters and ... one had the impression that one was really involved in what was happening within the leadership (Pair interview about the Past 9. 12. 2009).

There have been great changes in the tools teachers use in the classroom but very little changes in the division of labour between the teachers and the students in the classroom. There are some clues that at least three of the participants are beginning to experience a change in the division of labour within the classroom as a consequence of the students voices growing in the classroom.

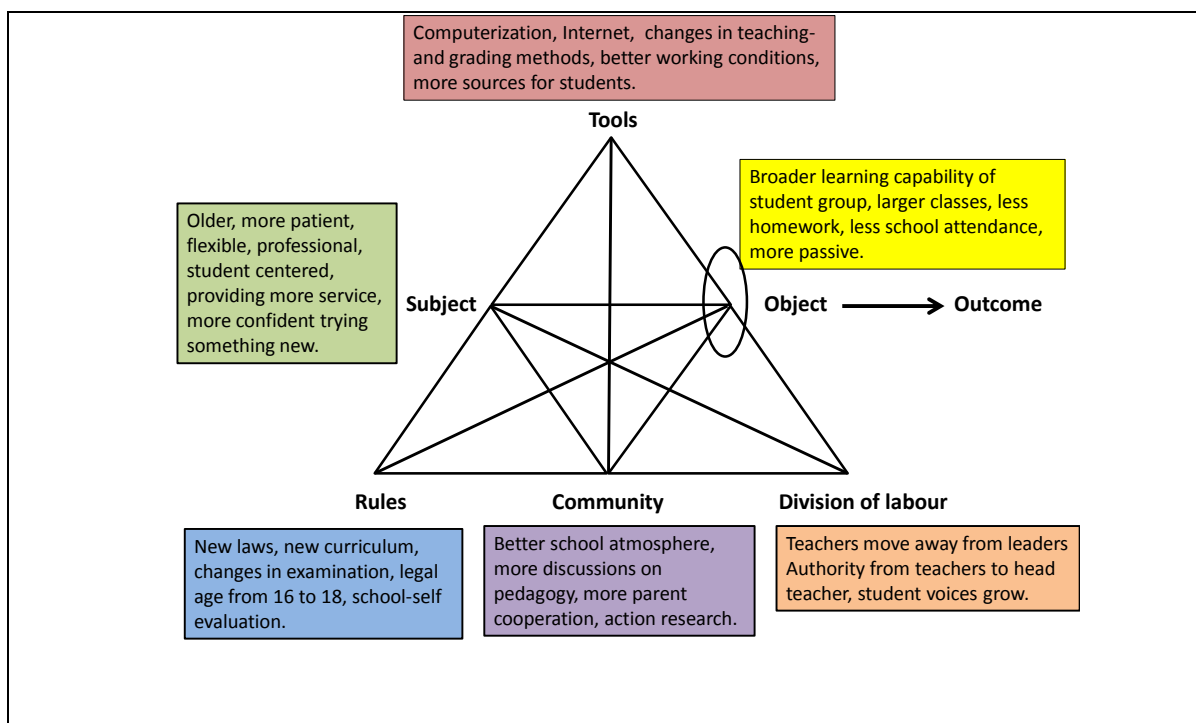
Mist (50+ Icelandic 22) maintains:

The school leaders have the final power in many issues relating the practice and then the students have power. Their power has been steadily increasing. As we listen more to their voices and they have an opportunity to evaluate the teacher's work regularly in student surveys their voice is getting stronger but that can be a little double-edged. My experience tells me that we must and that it is time that the teachers should be aware of not losing their status (Pair interview about the Past 9. 12. 2009).

Here the change in the division of labour between teachers and students is at the same time welcomed and resented as although it is seen as a positive development that teachers listen more to students' voices than before, it is worrying for teachers if it will have negative effects on their own power status and social position within the school system.

10.1.8 Overview of the changes from past to present

An overview of the changes from the past to the present in Sjárvarsíðuskólinn is given in Figure 10-1. The main finding is that the participants have experienced great changes within all the elements of school as an activity system but far the greatest changes have occurred in relation to the elements of tools and rules, mainly as a consequence of the technical revolution and new laws and regulations on the secondary school level. These changes from the past to the present created tensions within the activity system of Sjárvarsíðuskólinn that were discussed by the participants in the Change Room and will now be described in the next section.



(Adapted from Engeström, 2001)

Figure 10-1 The Activity system of Sjárvarsíðuskólinn. Changes from the past to the present.

Next I will discuss the main manifestations of contradictions or tensions within the activity system of Sjárvarsíðuskólinn as experienced by the participants in the Change Room, the action research group members.

10.2 Manifestations of contradictions in Sjárvarsíðuskólinn

Contradictions are the necessary power of expansive learning and the driving force of change within the activity system according to the activity theory (Engeström, 1999c, 2001, 2007b; Engeström & Sannino, 2010) as was discussed in sections 5.2 and 5.4. The basic contradiction is between the use value and exchange value of every good. Material commodities have use value for the consumers and exchange value in the market (Engeström, 2008a). The object of learning in a certain subject course has both use value for the student and exchange value for him through the grade for the course. It is important for people engaged in expansive learning to identify and discuss the manifestations of contradictions within the activity system (Engeström & Sannino, 2010). Contradictions manifest themselves through actions of individuals, i.e. conflicts or tensions that the participants experience. In the Change Room we first looked at tensions in the activity system of Sjárvarsíðuskólinn in relation to the changes in Sjárvarsíðuskólinn from the past to the present and secondly tensions in the activity system of the classroom in the present in relation to discussions of individual action research projects that will be described in section 11.2.

According to the theory of expansive learning, see section 5.4, contradictions can be identified at four levels and they are likely to appear at different steps in the expansive learning cycle. Primary contradictions appear within each component of the activity system and they are most likely between the first and second steps in the expansive learning cycle. Secondary contradictions appear between two elements of the activity system. They are most likely between the second, third, fourth and fifth steps in the expansive learning cycle. Tertiary contradictions appear between new and old forms of practice when changes take place i.e. after the fifth step in the expansive learning cycle of implementing the new solution within the activity system and some people resist the changes. Finally quaternary contradictions appear when changes in one activity system calls for changes in

another activity system or activity systems need to work together in order to co-configure their activity. That happens at the final step in the expansive learning cycle of consolidation of the new form of practice (Engeström & Sannino, 2010; Jóhannsdóttir, 2010a; Virkkunen & Newnham, 2013).

In this chapter I will identify the main manifestations of contradictions in the activity system of Sjárvarsíðuskólinn based on the interviews and discussions about the changes from the past to the present of Sjárvarsíðuskólinn and classify the main tensions according to their location within the activity system. I will describe each contradiction as it appears through the tension experienced by the participants, give examples from individuals of each tension and distinguish at which level each contradiction can be put.

10.2.1 Object: Hard working or getting easily away

The subject, the teachers, describe a tension in the object, the students' learning. The students are a very varied group; they jump between being hard working and wanting good grades and being absent, not doing their homework and not as dependable as before.

Bjarki (60+ Danish 23) explains:

I found out a long time ago that there was no use in giving them [students] homework because they never learn at home. So one puts an assignment in motion and expects them to sit and work. Then it comes into light that a certain group just sits, never started and I found out gradually this winter what I was so stupid not to see that they were waiting for someone to finish so they could copy after them (Pair interview about the Past 9. 12. 2009).

The teachers think that the students read less than before and that the group who cannot read well when they arrive in Sjárvarsíðuskólinn is getting bigger.

Jónas (40+ Mathematics 11) asserts:

What I think is very striking is the increasing number of students who have not read general literature texts. So it is my feeling that

the group that can't read fluently is getting larger (Pair interview about the Past 9. 12. 2009).

This is a tension on the first level, a primary contradiction. It is a tension between the ideal type of ambitious hard working student and the reality of praxis of a student who is "looking for the easy way out". It is closely related to and could partly be the cause of the main tension between the subject, the teacher and the object, the students' learning that I turn to now.

10.2.2 Subject – Object: Difficult to meet the needs of all students

The main tension between the subject, the teachers and the object, the students or more specifically the learning of the students as experienced by the teachers is that it is much more difficult for the teachers to provide appropriate learning opportunities for all students nowadays than before. The teachers experience tension between not being able to provide enough or the right learning opportunities for the students as the students' learning abilities are becoming increasingly varied and students with dyslexia and other learning difficulties, who need special service, are increasing in number. The teachers feel that they can not meet all the students where they stand because they are not all at similar learning level when they arrive in the school.

Other teachers are experiencing tension between providing the students with too much service in some areas i.e. on the intra net and not providing them with the right demands to become independent responsible students. Some participants also consider that the demands towards the teachers are steadily growing but not the demands towards students and some participants ask if the teachers are providing the students with too much service.

Mist (50+ Icelandic 22) asserts:

Teachers have gone berserk in making notes and putting it on the intra net. Students' don't think they need to attend classes anymore and the teaching methods have not changed to prevent this leak (Pair interview about the Past 9. 12. 2009).

This tension is both secondary contradiction between the element of subject and object but it is also a tertiary contradiction as the teachers are resenting the changes in the composition of the students group and are finding it difficult to adapt their teaching accordingly.

10.2.3 Subject – Tools: One or two way communication

The main tension between the teachers and their tools concern their teaching methods i.e. tension between one way and two way communication or didactic and dialogic teaching methods. Before, it was clear that the main role of the teacher was to be a provider of subject knowledge and he or she used the lecture method and the blackboard to bring the knowledge to the next generation. Nowadays however, that idea is being questioned and ideas about the teacher as a supervisor and facilitator of active participative learning is gaining strength (Beloff Farrell, 2009; H. Guðjónsson, 2012; Prince, 2004; Wells, 2011).

Elísabet (30+ Geology 1) has begun to use students' group work and various assignments much more in her teaching but sees it as a slow process.

Elísabet explains:

I have now the courage to try out different ways of teaching. I remember that in the beginning I was extremely scared of group work, I just got goose bumps. I was just down in the dumps, got into the class and let them govern themselves. I found it so difficult; I just wanted to spoon-feed them. It just had to be so that I needed to spoon-feed them, each one in his/her own corner. I am improving and I know I can improve even more in this field, I know that definitely. This is a slow process ... (Pair interview about the Past 9. 12. 2009).

Some of the teachers who experienced this tension were not describing a change process but described mixed feelings towards it, one defended the use of the one way communication and one expressed the wish to use two way communication more than she actually did.

Magnús (60+ Physics 8) describes:

...but I am always developing my teaching. The methods change little by little, perhaps because outside factors push you into it. Not because you necessarily think it is the best; but you just automatically let yourself be carried along. I have sometimes said to myself what my predecessor said: "I have not come across any method that is better than the blackboard and the chalk" (Pair interview about the Past 9. 12. 2009).

Íris (50+ Danish 19) says:

Schools are conservative institutions and we use much more traditional teaching methods than we always say that we would like to (Pair interview about the Past 9. 12. 2009).

This is a secondary contradiction between two elements in the activity system, the subject and their tools but it is also a tertiary contradiction as the subjects are resisting or hesitating to make changes in the tools, i.e. their teaching methods.

10.2.4 Subject – Rules: Cover material or deep learning

As was described in the last section, participants have experienced great changes in the activity system of Sjárvarsíðuskólinn that are related to the element of rules. Most of these changes are seen by the participants as caused by outside factors namely new laws and regulations concerning the secondary school system, for example the new state general curriculum in 1999. Some of these changes are resented by the participants and have caused tension between the subject and the rules. The main tension is between the teachers' perceived demand to cover the syllabus and an experience of a sense of urgency for deep learning.

The demand is that teachers cover all the material according to the curriculum of Sjárvarsíðuskólinn and according to the syllabus or teaching plan of the semester for each course that is taught. The teaching plan is created by the subject department and based on the school's curriculum. This demand to cover the material is not only a formal demand but also an informal cultural demand that the

teachers are facing from the community. There is a demand both from the department and students that teachers teaching the same course cover the same material as the final exam is the same for all the students. Students sometimes complain if the teachers do not cover all lesson material for the final exam. That demand is often in conflict with the view of many teachers that more learning goes on when students look deeper at certain chosen parts of the teaching material than when a lot of material is covered loosely. Covering the material according to the curriculum seems to be in the foreground when teachers plan their teaching through the school semester.

Rakel (40+ Icelandic 4) maintains:

Provided that I am able to cover the material and I believe that they [the students] are learning more rather than less then I have been unafraid of that [trying out new methods] and made such decisions (Pair interview about the Past 9. 12. 2009).

Íris (50+ Danish 19) describes her experience:

It is one thing that you are always struggling with as a language teacher and that is to get the students to speak, that is always the problem. And I understand it is also the experience in English and all other languages. Icelandic students are passive, they like to be fed but never the less they enjoy talk exercises, at least in the first year. But this is something that is left out. It is always a race to get through a certain amount of material (Pair interview about the Past 9. 12. 2009).

This tension is a secondary tension between the subject and the rules and can also be viewed as a tertiary tension arising from the fact that the central curriculum for secondary schools has not been changed since 1999 but teachers have been changing their teaching methods and that has caused this tension between the subject and the rules.

Some of the participants uttered negative responses to the classes growing in size. In 2000 the rule about class size was moved from the Teachers Union Salary Contract and a special regulation was passed by the Ministry of education about class size that allowed an increase in class size i.e. up to 31 students and after that the school needs to make a deal with the teacher and pay compensation for every student over that number. Especially after the recession, secondary schools have increased the class size and Sjárvarsíðuskólinn is no exemption.

Rakel (40+ Icelandic 4) describes the effects of the increase in class size:

More students in a class have increased the workload a lot and we provide worse service than before as we have to take care of more students. That is really negative. (Pair interview about the Past 9. 12. 2009).

These are signs of tensions between the subject, the teacher and the rules, the curriculum and class size and that is a secondary contradiction. It is also a tertiary contradiction as this is partly a consequence of teachers still resenting and resisting changes made in the Central Secondary School Curriculum of 1999 regarding standardizations of course descriptions in individual subjects that are reflected in the School Curriculum of Sjárvarsíðuskólinn and also resenting the consequences of the recession regarding increased class size.

10.2.5 Subject – Division of labour: Power moved from teachers to school-leaders

As was described in the last section many of the participants in the Change Room have experienced a decrease of teachers' power in Sjárvarsíðuskólinn as they experienced the power transferred from the teachers to the head-teacher although the teachers experienced themselves still very powerful in the classroom. This has created tension between the subject, the teacher and the head-teacher or the vertical division of labour within the school. It was described by one participant as a development from democracy to monarchy. This was described in the last section under division of labour. The older teachers have experienced the power

transferred from teachers meetings and meetings of heads of department to the school-leaders through formal changes in regulations.

Mist (50+ Icelandic 22) asserts:

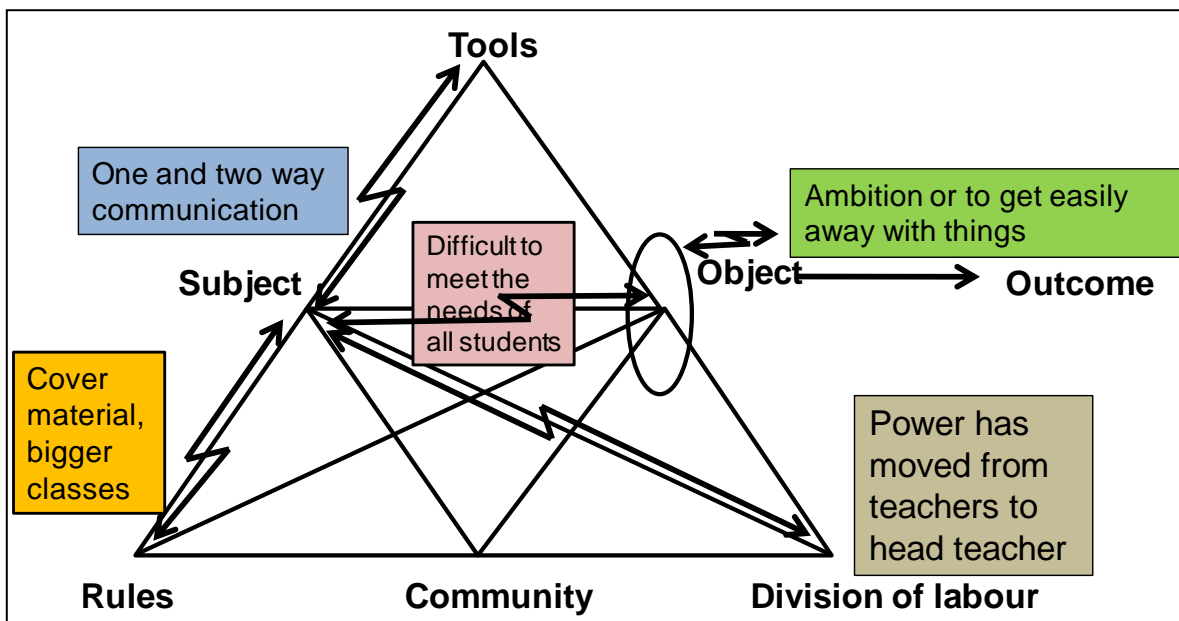
Truly the teachers have some influence but the power has moved into fewer hands. It is the school-leaders who have the final say in many matters relating to the school work (Pair interview about the Past 9. 12. 2009).

Bjarki (60+ Danish 23) maintains:

Now the head-teacher has really great power compared to before. All the power was moved from head of subjects and teachers and given to him. It is certain that the concept of democracy, for good or bad, was much stronger in the old days (Pair interview about the Past 9. 12. 2009).

These are signs of tensions between the teachers and the school leaders i.e. the subject and the division of labour and that is secondary contradiction. Additionally it is also a tertiary contradiction as this is partly a consequence of teachers still resenting and resisting changes made in leadership of subject departments, teachers' meetings and school boards in the Secondary School Act of 1996 and teachers salary contract from 2001.

An overview of the tensions, of the past, described in this section in the activity system of Sjárvarsíðuskólinn is presented in Figure 10-2 and it also shows where the tensions are placed within the activity system of Sjárvarsíðuskólinn. Two of these tensions, one and two way communication between the subject and the tools and coverage of material between the subject and rules do also appear as two of the main tensions at the Present in the activity system of the classroom in Sjárvarsíðuskólinn.



(Adapted from Engeström, 2001)

Figure 10-2 Tensions in the activity system of Sjárvarsíðuskólinn.

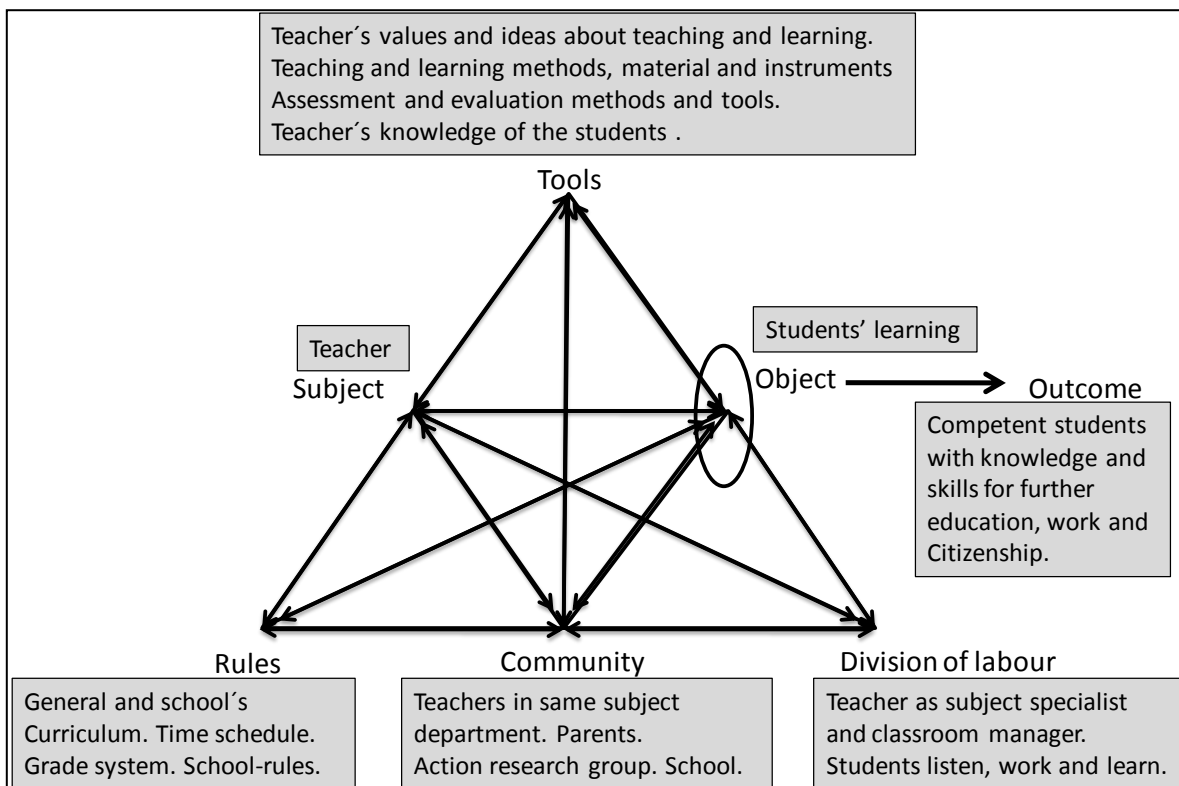
In chapter 11, I will firstly discuss the conceptual framework of the activity system of the classroom. Secondly I will provide an overview of the individual action research projects. Thirdly the tensions experienced by the subjects in classroom practice are discussed. Fourthly I will describe the main changes the participants in the Change Room made in their classroom practice under the themes of students as active learners and listening to students' voices. Lastly I will describe two of the individual action research projects in more detail.

11. THE CHANGE ROOM - ACTION RESEARCH IN THE CLASSROOM

11.1 The activity system of the classroom

The activity system of the classroom from the perspective of the subject as the teacher is shown in Figure 11-1. The object is the students' learning. The tools are cultural instruments, both material and mental instruments that fundamentally shape the actions of the subject, for example computers and the subject's ideas about the process of learning. The tools mediate between the teacher and the student and learning takes place. Engeström's (2001) activity system also includes the collective dimension and draws attention to the complex interrelations between the subject and the social and cultural context. Rules refer to the values and regulation of action and interaction of subjects, for example the school curriculum, the laws concerning secondary education, and the time table. The community is the group having an influence or an interest in the same object i.e. the students of each class, the teacher's subject department, the action research group and sometimes other parties inside and outside the school. The division of labour refers to division of tasks and power relations within the classroom both vertically and horizontally between teachers and students. The traditional roles are the active teacher with the power and authority and the passive powerless students who are receivers of knowledge. The desired outcome of the system is students with competence and ability to move on to further education and work and become responsible citizens of the society as shown in Figure 11-1.

By adding the elements of rules, community and division of labour Engeström emphasises the social aspects of the activity and calls for analysis of the interactions of these elements with each other. Activity theory draws our attention to possible tensions or conflicts within the activity system and they are the sources for change or transformations according to Engeström (Engeström & Sannino, 2010).



(Adapted from Engeström, 2001)

Figure 11-1 The activity system of the classroom - the Present

I used the activity system of the classroom, shown in Figure 11-1 above, to visualise the action research projects of individual participants in the Change Room i.e. the individual projects that were presented at the meetings in the Change Room.

The object, the students' learning and the actors behind the learning the students themselves are in the foreground in teachers' mind and in the object lays the motive for the teachers work in the activity system of the classroom (Leont'ev, 1978). The following poem, "They", by Finnur, one of the participants illuminates this:

They

So infinitely irritating, well sometimes
So infinitely lazy, now and then
So infinitely stubborn, at times
So infinitely something, which I still keep coming for.

So infinitely fun, interesting, refreshing, life-giving,
curious about the world.

They
who I want to meet, to talk to, to help growing up.

They
who I want to learn not to do the same mistakes I did
though I know they'll do too many of them
and have to hit their own walls.

They
who we fight for getting a good education, good schools, a good life
and preferably everything better, everything good.

They
who were like us

They
who'll become like us
but still
always
themselves
our students.

11.2 Overview of participants' action research projects

I will now provide an overview of the action research projects of the participants in the Change Room. All the 21 participants in the Change Room introduced their action research projects and an overview of them is given in Table 11-1. A total of 16 presentation of action research projects from 18 participants were given in the Change Room. I visualised these action research projects in the activity system of the classroom from the point of view of the teacher as the subject. Most of these Figures were presented to the participants and the group at the meetings in the Change Room. Overview of these action research projects that were presented at the meetings in the Change Room are provided in Tables 11-2, 11-3 and 11-4.

It should be noted that the elements within the activity system of classroom practice and the tensions are identified by me from the participants' presentations and discussions at the meetings in the Change Room. It is likely that the group has

developed a similar interpretation of the reality in Sjárvarsíðuskólinn through working there together and discussing classroom practice in the action research group and at other meetings in the school. It is not certain that an outside researcher would interpret the data in a similar way to me as it is always a subjective interpretation.

In Table 11-1 an overview is provided of all the participants in the Change Room, their pseudonym, gender, biographies i.e. age, teaching subject or area of work, length of working in Sjárvarsíðuskólinn, length of participation in the Change Room, their main concern and focus of their action research project. See further description of the participants in the Change Room in section 9.1.

Pseudonym	Gender	Biographies	Participation	What is my concern?	Action research focus
Andrea	Female	(40+ Mathematics 6)	Two years	Lack of students' activity in the school's intra net to gain mathematical material to work on	Communication on Mathematics with students on Facebook
Anna	Female	(20+ Biology 1)	One year	Lack of students' involvement in learning Biology in the classroom	Teaching and learning methods in Biology and students' attitudes towards them.
Bjarki	Male	(60+ Danish 23)	One year	Lack of optional courses based solely on students' cross curriculum project work	Project work in a cross curriculum optional course in Danish and History
Dagmar	Female	(50+ Citizenship 9)	One year	Need to develop teaching and learning in Citizenship and increase students' interest in sustainability	Participation in an international project on sustainability. Creating students assignments and teaching guidelines
Elísabet	Female	(30+ Geology 1)	Two years	Lack of students' active participation in learning Geology and longing to increase students' interest in the geology of Iceland	Students' attitudes towards Geology
Finnur	Male	(30+ English 2)	Two years	Absence of direct grammar teaching in English in secondary schools	English grammar teaching
Gunnar	Male	(50+ Mathematics 7)	Two years	Students' difficulties in understanding mathematical problems and failing at exams	Reading Mathematics. "Shift reading"
Helena	Female	(30+ Icelandic 1)	One year	Lack of students' commitment and involvement in their studies in Icelandic in class and homework	Students assignments in Icelandic, creating databank and the "Court of sagas"
Ingunn	Female	(50+ School leader 24)	Two years	Need to find out staff and students view of the new school rule of real attendance in order to decide if to continue with it	Staff and students' attitudes towards real attendance and change in the grade for real attendance
Íris	Female	(50+ Danish 19)	Two years	Need to enhance students' ambition and involvement in their studies in Danish	Various students' assignments in Danish
Jónas	Male	(40+ Mathematics 11)	Two years	Students' dissatisfaction with exam outcome in Mathematics	Cooperation with students on composition of assessment in Mathematics. Alfa - Beta - Gamma
Katrín	Female	(20+ Chemistry 2)	Two years	Need to create new course descriptions in Chemistry for the new school curriculum	Preparation for the new curriculum in Chemistry.
Lára	Female	(60+ English 17)	One year	Need to find out if English is a suitable subject for teaching in a class based periodic system	English course in a class based periodic system
Magnús	Male	(60+ Physics 8)	One year	Need to reorganise experiments in Physics because of cuts in lessons for experiments	Students attitudes towards experiments in Physics
Mist	Female	(50+ Icelandic 22)	Two years	Lack of students' interest and involvement in their studies in the history of 20 th century Icelandic literature	Students' learning the history of 20 th century Icelandic literature through a visit to old peoples home and interviews with old people
Nanna	Female	(50+ Biology 0)	One year	Lack of students' involvement in learning Biology in the classroom	Various students' group assignments, cooperative learning.
Oddur	Male	(50+ Chemistry 7)	Two years	Need to create new course descriptions in Chemistry for the new school curriculum	Preparation for the new curriculum in Chemistry.
Petra	Female	(50+ School leader 20)	Two years	Need to develop ways for professional development of school practitioners	The Change Room
Rakel	Female	(40+ Icelandic 4)	Two years	Only some not all of the students are participating in presentations of assignments in Icelandic	Icelandic: Expression but not depression
Sandra	Female	(40+ History 20)	Two years	Lack of optional courses based solely on students' cross curriculum project work	Project work in a cross curriculum optional course in History and Danish
Telma	Female	(50+ Student counsellor 12)	Two years	Lack of personal and learning support for students with dyslexia and dyscalculia	Develop an optional course, Learning methods, in cooperation with the students (dyslexia and dyscalculia)

Table 11-1 Overview of the participants action research projects

The teachers' concern related mostly to the students and their learning activities or rather lack of the students' participation in their learning. The teachers were concerned about the students' lack of interest in the subject, lack of their direct involvement in the learning process, in lessons, in homework or both. The concern of the other staff was also directed at the students i.e. students' actual attendance and the learning of students with dyslexia and dyscalculia.

The focus of the teachers' action research projects was mainly on the students as learners. Firstly, finding ways for active involvement of students in their own learning and to guide the students when as they construct their own understanding of the learning material. Secondly, examining the students' attitudes towards changes made in classroom practice and the teaching and learning in general in the course. This will be further described and discussed in section 11.4. The focus was mostly on teaching and learning, only in two projects on students' assessment. All action research projects of the teachers were in one teaching subject except one was cross curriculum. Most projects were confined to the school but three projects involved direct collaboration with other institutions. Most of the projects were individual projects, except three but that does not provide the whole picture of the collaboration of the participants at their work in general. It appears that teachers are increasing their collaboration with other teachers but when it comes to their action research projects they prefer to work on their own. This will be discussed in sections 12.3 and 12.4.

The objects in the action research projects were students and their learning a particular subject. The students were studying languages, social and natural sciences. The students were spread among all study years, 9 projects focused on students in the first and second study year and 5 projects on students in third and fourth study year, see overview in Table 11-2.

The tensions experienced by the teachers as described at the meetings in the Change Room were similar in some respect but not others. The most common tension, described in thirteen projects was between students' active or passive learning. That reflects the teachers' main concern of lack of students' direct involvement in their learning as described earlier. In five projects participants

described tension between one and two way communication in the classroom and in five projects the participants described tension between coverage of material and deep learning. These three main tensions experienced in the activity system of the classroom will be described and discussed further in section 11.3. Participants were also experiencing other tensions and these are discussed in descriptions of individual action research projects and some were discussed earlier in section 10.2 as they were also related to the changes from the past to present in Sjárvarsíðuskólinn, i.e. extra classes for experiments and large or too large classes. See overview of the tensions in Table 11-2.

The tools the participants used in their action research projects were many and varied. Of the elements within the activity system of the classroom perhaps the greatest changes took place in the tools of classroom practice. That is in line with the focus of most action research projects being to find ways to get students more directly involved in their learning process. Change in tools can be viewed as the teachers' attempts to solve the tensions between active and passive learning and between one and two way communication with emphasis on tools for active learning and two way communications. Many of the tools tried out were meant for increasing the active learning process through more meaningful and creative individual and group assignments for example cooperative learning, quizzes, mind mapping, discussions, projects, open questions, diaries, presentations, peer teaching, field trips and station training. New tools were also tried out for assessment with emphasis on continuous evaluation measures, for example portfolio, self-assessment, picture exams, exams with aids and cooperation with students on composition of assessment i.e. alpha - beta - gamma, described in section 11.5.2. Other tools most often used were surveys, questions and discussions i.e. tools for communication with the students about their attitudes towards the interventions involved in the action research projects and classroom practice in general in the course. These are discussed further in section 11.4. See overview of the tools in Table 11-2.

Pseudonym	Action research focus	Object	Tensions	Tools for change in practice
Andrea	Communication on Mathematics with students on Facebook	Students' learning Mathematics in 2. year	Students passive or active on the school's Intranet. Students follow teacher's information badly or well.	Closed groups and secret groups on Facebook, the school's intranet.
Anna	Various students' assignments in Biology and students' attitudes towards them.	Students learning Biology in 1. year social science study line.	Students passive or active. Coverage of material or deep learning. Extra classes for experiments or not.	Assignments, quiz, mindmapping, exams with aids, collective notes, discussions, survey.
Bjarki	Project work in a cross curriculum optional course in Danish and History	Students' learning Danish and History in an optional course for 3. and 4. year	Students passive or active. Coverage or depth. Grades or use value of learning.	Cross curriculum project group work. Publish projects reports on website. Trip to Denmark.
Elísabet	Students' attitudes towards Geology	Students' learning Geology in 1. year natural science study line.	Students passive or active. One or two way communication. Large or small classes.	Assignments, exams with aids, mid term evaluation, survey, discussions.
Finnur	English grammar teaching	Students learning English in 1-2 year of study	Students passive or active. Direct or indirect grammar teaching. Students prepared or not in grammar.	Grammar practices. Understanding of students' pre-knowledge of grammar. Survey.
Gunnar	Reading Mathematics. "Shift reading"	Students learning Mathematics in 1. year of study.	Students passive or active. Pull or disseminates. Doing maths or reading and doing maths.	Shift-reading, assignments, posters, learn to learn.
Helena	Students assignments in Icelandic, creating databank and the "Court of sagas"	Students learning Icelandic in 2. year language study line.	Students passive or active. One or two way communication. Coverage or depth.	Assignments, 'Court of sagas', Databank on the Intranet, open personal questions.
Ingunn	Staff and students' attitudes towards real attendance and change in the grade for real attendance	Student attendance.	Actual attendance scaling. Dissatisfaction with attendance rules.	Changes in actual attendance scaling, survey, interviews, meetings, statistical information.
Íris	Various students' assignments in Danish	Students learning Danish in 2. year.	Students passive or active. Fail or pass. Weighting in final grade.	Students' evaluation, cooperative learning, group work, presentations.
Jónas	Cooperation with students on composition of assessment in Mathematics. Alfa - Beta - Gamma	Students learning Mathematics in 3-4 year economics line.	Students passive or active. Exam anxiety or calmness. Individual assessment or same for all. Dissatisfaction with exam outcome.	Individual composition of assessment, alfa - beta - gamma system.
Katrín	Preparation for the new curriculum in Chemistry.	Students learning Chemistry in 1 and 2 year natural science line.	Students passive or active. Extra classes for experiments or not. New standards or old aims. New or old credit.	New concept: Competence, portfolio, self-evaluation, survey.
Magnús	Students attitudes towards experiments in Physics	Students learning Physics in 2-4 year natural science line.	Extra classes for experiments or not. Grades or use value of learning.	Experiments, reports, survey,
Mist	Students' learning the history of 20 th Century Icelandic literature through a visit to old peoples home	Students learning the history of 20th Century Icelandic literature in 4. year.	Students passive or active. Students victims or creative. One or two way communication. Coverage or depth.	Visit to Old peoples home. Interviews with old people. Written product.
Nanna	Various students' group assignments, cooperative learning.	Students learning Biology in 1. year social science study line.	Students passive or active in lessons. One or two way communication.	Cooperative learning. Role division in assignments, peer teaching, station training, creative work, 'Cell claying.
Oddur	Preparation for the new curriculum in Chemistry.	Students learning Chemistry in 1 and 2 year natural science line.	Students passive or active. Extra classes for experiments or not. New standards or old aims. New or old credit.	New concept: Competence, portfolio, self-evaluation, survey.
Petra	The Change Room	Participants expansive learning in the Change Room.	Time or shortage of time. Praxis or theory. Action research group or subject department.	Action research, double stimulation, expansive learning cycle, discussions, interviews, presentations, survey, documents, diary.
Rakel	Icelandic: Expression but not depression	Students learning Icelandic in 3-4 year language study line.	Students passive or active in presentations. One or two way communication. Coverage or depth. Too little space for expression.	Students expressions and presentations, video recordings, diaries, survey, model teaching.
Sandra	Project work in a cross curriculum optional course in History and Danish	Students' learning Danish and History in an optional course for 3. and 4. year	Students passive or active. Coverage or depth. Grades or use value of learning.	Cross curriculum project group work. Publish projects reports on website. Trip to Denmark.

Table 11-2 Overview of the tensions and tools in the action research projects

An overview of the societal aspects of the action research projects or the elements in the lower half of the triangle for the activity system of the classroom is given in Table 11-3.

Under the activity system's element of rules; the curriculum, the semester plan and the textbook seems to be directing the teachers' work in the classroom. Some participants experienced certain school rules as having influence on their work for example Mist with the rule about one right answer to exam questions, Jónas with one rule for all students for assessment composition in the course and some teachers in natural sciences the rule of the reduction in lessons for experiments.

The community is in most cases the subject department, the class and the action research group. In some instances the participants crossed the school boundaries and collaborated with the outside world e.g. in a care home for the elderly, a secondary school in Denmark, the Society of English Teachers in Iceland and the Society of Natural Science Teachers in Iceland.

The division of labour was traditional in most cases, the teachers delivering knowledge and acting as classroom managers and the students acting as recipients of knowledge and following instructions on assignments and exams. In some instances the teachers were starting to hand some power over to the students to enable them to take part in shaping the learning environment. In one case, the optional course with Bjarki and Sandra, the student projects were the main focus in that course. See overview in Table 11-3.

The societal aspects are very similar in each particular action research which is perhaps not very surprising as the participants are all working in the same secondary school and the school is a traditional school with class based system and homogeneous student group learning for the final matriculation exam. This is also in line with new research in Iceland that showed that classroom practice was very similar in 8 secondary schools in Reykjavík, both regarding working methods and students' activities (Óskarsdóttir, 2012). Perhaps the lack of changes in the societal aspects of the activity system of the classroom, especially the rules and

the division of labour are influencing the school's development? This will be discussed later in the thesis.

An overview of the perceived outcome of the action research projects is given in Table 11-4 This is the perceived outcome of the action research projects as the participants presented the outcome at the meetings in the Change Room and in their reports and presentations of their action research projects.

The outcome is focused on the changes in students' learning behaviour and that is in line with the main focus of the projects that is enhancing active student learning. The outcome most often described is more active and interested students with better grades, especially in the lower achievement group. In some projects the participants also mention that students are more satisfied, creative, independent, competent, work more and have more influence on their learning. In general, this outcome indicates more students' involvement in their learning.

The participants ground their conclusions on the data they collected, their subjective experience and tacit knowledge. They also often ground it on the outcome of students' assignments and presentations and students' answers to open questions that indicate how the students experience the outcome of the intervention in the action research projects. When increase in grades is the perceived outcome the participants rarely give information about comparison of grades before and after they carried out their projects but rather describe the change in general terms.

Pseudonym	Action research focus	Rules	Community	Division of labour
Andrea	Communication on Mathematics with students on Facebook	Term teaching plan. Rules about the use of the intranet	The Mathematic department. The class. The action research group.	Traditional.
Anna	Various students' assignments in Biology and students' attitudes towards them.	The term teaching plan. Textbook. Fewer lessons for experiments.	The Biology department. The class. The action research group.	Traditional.
Bjarki	Project work in a cross curriculum optional course in Danish and History	Time table. Optional course. Continues assessment.	The Danish and History departments. The class. The action research group. School in Denmark.	Teachers stop direct teaching and start guiding active students through the process of
Elísabet	Students' attitudes towards Geology	Class size. Textbook directs teaching.	The Geology department. The classes. The action research group.	Traditional.
Finnur	English grammar teaching	Curriculum in English. Course descriptions. Direct grammar teaching removed from curriculum.	The English department. The action research group. Teachers at all school levels in the Society of English teachers.	Traditional.
Gunnar	Reading Mathematics. "Shift reading"	Emphasis in syllabus on which math problems to solve.	The Mathematic department. The class. The action research group.	Traditional.
Helena	Students assignments in Icelandic, creating databank and the "Court of sagas"	Course descriptions. Term plan in Icelandic.	The Icelandic department. The class. The action research group.	Teacher manager. Students take part in shaping the learning environment.
Ingunn	Staff and students' attitudes towards real attendance and change in the grade for real attendance	School rules. Actual attendance 5% of student's performance evaluation.	School-leaders, counsellors, school-board, staff, students, parents. The action research group.	School-leaders make decisions on school rules. Teachers record attendance. Students hand in certificates.
Íris	Various students' assignments in Danish	Final exam in 2. year. Separate grades for exam and term work. Term plan.	The Danish department. The class. The action research group.	Teacher manager but increased collaboration with students.
Jónas	Cooperation with students on composition of assessment in Mathematics. Alfa - Beta - Gamma	Assessment composition described in term plan. Assessment in curriculum.	The Mathematic department. The class. The action research group.	A change from teacher deciding one assessment for all students to each choosing between three options.
Katrín	Preparation for the new curriculum in Chemistry.	Lessons fewer per week. Rules will change in the new curriculum.	The Chemistry department. The classes. The action research group. The Society of teachers in natural sciences.	Traditional. Student's role increased.
Magnús	Students attitudes towards experiments in Physics	Lessons fewer per week in Physics. Each report on experiment weights 2-3% of grade.	The Physic department. The classes. The action research group.	Traditional.
Mist	Students' learning the history of 20 th century Icelandic literature through a visit to old peoples home and interviews with old people	Cover syllabus. Exams questions with one right answer.	The Icelandic department. The class. The action research group. The Old peoples home.	Traditional but the students' power over their learning is increasing.
Nanna	Various students' group assignments, cooperative learning.	Continuous assessment. Teaching term plan. Textbook.	The Biology department. The class. The action research group.	Teacher directs and evaluates students' learning. Students active in assignments.
Oddur	Preparation for the new curriculum in Chemistry.	Lessons fewer per week. Rules will change in the new curriculum.	The Chemistry department. The classes. The action research group. The Society of teachers in natural sciences.	Traditional. Student's role increased.
Petra	The Change Room	Action reflective cycle. Improve practice. Contradictions sources of change.	The action research group in the Change Room. Subject departments. School-leaders. School.	Outside consultant, group leader and researcher direct the work of active participants.
Rakel	Icelandic: Expression but not depression	No longer a special course for expression in the central curriculum.	The Icelandic department. The class. The action research group.	The teacher a director of learning and a model for expressions. Students active and creative learners.
Sandra	Project work in a cross curriculum optional course in History and Danish	Time table. Optional course. Continues assessment.	The Danish and History departments. The class. The action research group. School in Denmark.	Teachers stop direct teaching and start guiding active students through the process of project work.

Table 11-3 Overview of the societal aspects in the action reserch projects

Pseudonym	Action research focus	Object	Perceived outcome
Andrea	Communication on Mathematics with students on Facebook.	Students' learning Mathematics in 2. year	Students more interested. More work. Better grades especially in lower achievements groups.
Anna	Various students' assignments in Biology and students' attitudes towards them.	Students learning Biology in 1. year social science study line.	Students more active and interested in lessons.
Bjarki	Project work in a cross curriculum optional course in Danish and History	Students' learning Danish and History in an optional course for 3. and 4. year	More independent students. More able to use texts in Danish to understand history.
Elísabet	Students' attitudes towards Geology	Students' learning Geology in 1. year natural science study line.	Satisfied and interested students who "look to the mountains when they drive around the country".
Finnur	English grammar teaching	Students learning English in 1-2 year of study	Uncertain
Gunnar	Reading Mathematics. "Shift reading"	Students learning Mathematics in 1. year of study.	More work done in class and at home. Better exam results.
Helena	Students assignments in Icelandic, creating databank and the "Court of sagas"	Students learning Icelandic in 2. year language study line.	Students' more active and have more influence on their learning. Better grades.
Ingunn	Staff and students' attitudes towards real attendance and change in the grade for actual attendance	Student attendance.	Increased attendance, better grades.
Íris	Various students' assignments in Danish	Students learning Danish in 2. year.	Students more interested. More work. Better grades especially in lower achievement groups.
Jónas	Cooperation with students on composition of assessment in Mathematics. Alfa - Beta - Gamma	Students learning Mathematics in 3-4 year economics line.	More peace, more work, less exam anxiety, better grades.
Katrín	Preparation for the new curriculum in Chemistry.	Students learning Chemistry in 1 and 2 year natural science line.	Students' increased competence in Chemistry. New course descriptions in Chemistry.
Magnús	Students attitudes towards experiments in Physics	Students learning Physics in 2-4 year natural science line.	Students' skills and competence in Physics, scientific methods and transferral of knowledge.
Mist	Students' learning the history of 20 th century Icelandic literature through a visit to old peoples home and interviews with old people	Students learning the history of 20 th century Icelandic literature in 4. year.	More active, creative and satisfied students.
Nanna	Various students' group assignments, cooperative learning.	Students learning Biology in 1. year social science study line.	Students more active and interested in lessons.
Oddur	Preparation for the new curriculum in Chemistry.	Students learning Chemistry in 1 and 2 year natural science line.	Students' increased competence in Chemistry. New course descriptions in Chemistry.
Petra	The Change Room	Participants expansive learning in the Change Room.	Agency to change individual classroom practice to increase active learning and listening to students' voices.
Rakel	Icelandic: Expression but not depression	Students learning Icelandic in 3-4 year language study line.	Students happier and show more interest in learning.
Sandra	Project work in a cross curriculum optional course in History and Danish	Students' learning Danish and History in an optional course for 3. and 4. year	More independent students. More able to use texts in Danish to understand history.

Table 11-4 Overview of the perceived outcome of the action research projects

Next I will discuss the tensions experienced by the subjects of the action research group in classroom practice. The placement of these tensions will be shown within the activity system of the classroom. The main tensions can be put into three groups; firstly students as passive or active learners between object and tools, secondly one or two way communication between subject and rules, and thirdly to cover syllabus or deep learning between subject and tools. Examples will be given and discussed. A link will be made to the cycle of expansive learning and the four different levels of contradictions according to Engeström and they are linked to the different steps in the expansive learning cycle.

11.3 Manifestations of contradictions in the classroom

In the Change Room the focus is on tensions in the classroom as experienced by the subject i.e. the teacher. The tensions are viewed as a sign of need for change, and as a constructive mechanism for change since by addressing these tensions the resolutions may contribute to Sjävarsíðuskólinn development i.e. development of classroom practice. We need to understand the tensions that call for changes in order to understand what changes we need to make in the classroom practice.

Building on what the participants said in the presentations of their action research projects and discussions at meetings in the Change Room, three main tensions seems to be the most influential on teachers experience in the activity system of the classroom in relation to their attempts to change their practice. Firstly a tension between the tools and the object: the students as passive or active learners. Secondly, between the subject and the tools: use of one or two way communication between the teachers and the students and, thirdly, between the subject and the rules: material coverage or deep learning. These are all tensions between different elements within the activity system of the classroom and are therefore secondary contradictions that are influential at the fourth step in the expansive learning cycle of examining the new idea of changes in the practice. Two of these tensions (that is between one and two way communication and between material coverage and deep learning) also appeared clearly in the discussions about the changes from the past to the present in the school as a

whole. When the participants in the Change Room were trying to resolve these tensions new tensions were created that will also be pointed out.

11.3.1 Object – Tools: Passive or active learning

Firstly, there is tension between the object, the students' learning and the tools used to enable that learning. This is the issue of the students as passive or active learners. The teachers link students' active learning with students' responsibility for their learning. This tension appears according to the teachers for example in variations in students' school attendance, home work, participation in classroom work, use of the intra net and attitudes towards their studies.

Helena (30+ Icelandic 1) connects together lack of students' homework and lack of students' participation in the classroom during lectures as she describes:

My action research is twofold but both projects relate to the same issue, students' active learning. I don't like certain conditions when teaching in the classroom. My experience tells me, and you probably recognize this that when I am giving lectures the students' too often relax in their chairs and take a pause. I also see lack of students' homework as a serious problem. They don't read their schoolbooks at home, they turn up unprepared in class and that violates the prerequisite for covering the teaching material in the class. I am experiencing myself more and more often as a reteller from A to Z (Meeting, 18. 11. 2010).

Gunnar (50+ Mathematics 7) experiences the students as too passive in the classroom but he believes that they want to take more active part in the learning process and therefore he wants to make changes in his own role in the classroom:

I have discovered, I feel, this winter I find it hard to communicate from the blackboard where I am supposed to be explaining these concepts and keep up discussions about them. It is fine and good if it works but they [the students] are not listening, they are not taking notes, they are somehow not ready to receive. They prefer to be active and try, I mean to make them actively work with the

learning material rather than speaking into the air all the time. And I feel this winter I have been changing or my ideas that I should not be so much a disseminator but rather more of a puller, to pull it more through them rather than pour it on them (Meeting, 10. 05. 2010).

Mist (50+ Icelandic 22) does not want to look at the students as passive recipients of knowledge but rather as creative constructors of their knowledge and she feels that she has started to try to solve her tension between students' passive and active learning.

Mist explains:

But so it is of course this method of always being just telling them all the answers and somehow that the material is just something fixed, some package that is out there. A knowledge package. And the things are stuck there and you should just pour out of this package. I feel that is too narrow. Yes, I am moving from the narrow view that the knowledge is a standard package that should be laid on the table in front of them. And then I want to try to let they create something out of this package so they will take it in, and make it a part of something, their own feelings and experience and understanding of the world (Interview, 4. 2. 2011).

New tensions appear to be emerging between the teacher and his tools as a consequence of increase in students' assignments and project work that the teachers have introduced in order to activate students' learning or increase their participation in classroom practice and thereby their responsibility for their learning.

Teachers are experiencing tension in organising small group work and conversations with large classes in the traditional classroom. The traditional arrangement in the classrooms is created for teachers' lectures but does not support active group work interventions. Tables in straight lines in front of the teacher's table is not very suitable for group work and rearranging furniture takes extra effort and time from teachers and students.

Jónas (40+ Mathematics 11) comments:

The only thing of course that is difficult is the space in the classroom, especially if we have very large groups. To create a comfortable atmosphere in the classroom so it [group work] can neatly be carried out. One would wish for a hall with round tables. ... It is a better arrangement for conversations (Meeting, 10. 5. 2011).

Teachers are also experiencing tension because of increased work load outside the classroom due to of more time consuming assessment of students' products.

Finnur (30+ English 2) points out the increased workload outside the classroom in relation to Jónas' introduction of various assignments in relation to his system of alpha, beta, gamma in Mathematics:

Yes, yes. But now one hears every year that teachers are talking about a lot of work outside teaching and all that package. Even though it is a good system and I consider it a good idea then there is still this part you have to consider when implementing it. So we would decide to use it but then there is this part involving all the assessment outside teaching (Meeting, 7. 12. 2010).

This new tension is also a consequence of the second main tension, teachers are experiencing in the classroom, between one and two way communication, that we turn to next.

11.3.2 Subject – Tools: One or two way communication

Secondly, there exists a tension between the subject, the teacher and the tools between one and two way communication or didactic and dialogic teaching methods in the classroom. Is the teacher a provider of subject knowledge or a facilitator of active, participative learning? This tension is directly linked to the tension of passive or active student learning. In order to solve this tension and to be able to activate students learning, increase their participation in the classroom the teachers feel that they need to move from one way communication or the

lecture method towards two way communication that involves various teaching and learning methods.

Nanna (50+ Biology 0) describes her tension:

This one way communication isn't working at all so I am trying out various methods ... I feel that one really needs to restrain oneself because I have just finished my teachers' training education where I learned about different theories that agree on that one way communication doesn't work but nevertheless I am up there feeling that I need to tell them everything. One needs to restrain oneself and stop this as it isn't working, to do it somehow differently (Meeting 6. 10. 2010).

Mist (50+ Icelandic 22) says:

In my practice I am now more supervising my students' work rather than myself presenting some material (Interview, 4. 2. 2011).

When teachers try to change their practice and move from one way to two way communication they experience increased tension from the demand of covering the content as one teacher points out:

Anna (20+ Biology 1) says:

In the second semester, because I was teaching the same syllabus I was more relaxed and started to try out something new. And this year naturally I have tried out still more new methods. And then I met the coverage ghost at the end of semester, just krrrhhh. This is the coverage ghost. Are you joking, I was going to do so much more with you [the students] (Meeting 10. 05. 2010).

"The covering the content ghost" is the third tension that the teachers experience in the classroom practice i.e. between material coverage and deep learning and now I turn to describing that tension.

11.3.3 Subject – Rules: Cover material or deep learning

Thirdly there is tension between the subject, the teacher and the rules, especially the curriculum i.e. between covering the content and having students learn things deeply. It is demanded of the teacher to cover the syllabus but he/she often has a sense of urgency for deep learning. The demand, both formal and informal, is that teachers cover all the material in the course according to the curriculum of Sjávarsíðuskólinn and according to the syllabus or teaching plan of the semester in the course. That demand is often in conflict with the values of many teachers in the Change Room who tend to think that it is more useful for students to cover less material and dig deeper into it. That learning process will enable students to learn material in a different way and in a more self-directed way than otherwise is possible i.e. it enables the students to have more influence on for example the choice of what the learning is focused on and what learning methods are used. Teachers show their struggle with covering the content material by calling it names like “the coverage compulsion”, “the coverage obsession” or “the coverage ghost”.

A quotation from discussion in small groups about the present reveals the tension that the teachers experience between the demand to cover material and deep learning with active involvement of students.

Magnús (60+ Physics 8): I feel actually that I don't push the students enough into being performers.

Gunnar (50+ Mathematics 7): Yes, yes I agree with that.

Magnús: Yes it is obvious.

Telma (50+ Students' counsellor 12): I agree with that.

Gunnar: Yes.

Magnús: It is just because of the cut down in the students' class time as has been done, at least in my subject, it means that one has the phobia of covering the subject, that means you push it forward and use less time for the students to engage themselves in the subject because of shortage of time. Because it has not been officially said that you just lessen the material according to

the lesser time you have now got. I don't have permission to do that, I only work according to a certain curriculum.

Telma: Yes, curriculum.

Magnús: And the learning parts must go through there.

Gunnar: Yes, it is a stern master.

Magnús: Yes it is in a way. But some say: Less is more

(Small group discussion about the present. Meeting, 10. 5. 2010).

Here we see the tension between coverage and deep learning. Not being able to cover the material according to the curriculum is blamed on the cut down in class time for experiments and practical work in the natural sciences for example Physics. Thereby it is linked with the tension between the subject and rules about class time in the activity system of Sjávarsiðuskólinn i.e. cut in lessons because of the recession and it is also used as an explanation for lack of active learning i.e. linked to the tension between passive and active students' learning.

In the following three quotations in teachers' words one can see how the teachers would favour more students' deep learning over material coverage.

Elísabet (30+ Geology 1) says:

The demand is to cover all the material according to the curriculum. ... You get anxious that you need to cover all the material and that means you lack time; you push it hard and have less time for the students to work with the material themselves (Meeting, 10. 5. 2010).

Helena (30+ Icelandic 1) says:

I think it is worth considering if we don't need to start thinking about giving us more space for the learning material rather than instilling all the material in such a short time (Meeting, 18. 11. 2010).

And when trying out new assignments involving deep learning that take time the teacher experiences the conflict of coverage of syllabus even stronger.

Mist describes:

And really the mistake I make, that is not to push anything else off the table. And that is really what is restraining in these kind of projects. The semester plan is restricted to something quite different and there was no time allocated for this project in the care home for the elderly. And then when you start this project there is conflict and tension (Interview, 4. 2. 2011).

The coverage demand from the curriculum and the semester plan also prevents teachers from introducing project work. Although Jónas (40+ Mathematics 11) view is that the Mathematics has a language that students need to learn to express themselves in just as in the subject Icelandic and other subjects, he would find it hard to find time for such time consuming project work because of the demand to cover the syllabus. Jónas points out in relation to discussion on a project work involving students' expression:

It takes unbelievably long time. To let a project like that go through a class with 25 students takes 2 weeks. That is expensive in relation to the coverage politics. One needs to choose and reject. It is very expensive (Meeting, 7. 12. 2010).

It is clear that our outside consultant agrees with the preferred emphasis on deep learning. At the end of a lengthy discussion on how teachers lack time for deep learning because of the demand to cover material Hafþór declared:

Hafþór (Outside consultant) argued:

I am going to assert here and now that this coverage that we are discussing, I think it has made us blind, we have stopped seeing what really matters in learning.

Íris (50+ Danish 19) said:

That is absolutely true.

Hafþór continued:

One can ask oneself what it really means to learn the history of literature well? ... And how one does it? ... We are always stuck in the coverage and the students never experience any living knowledge (Meeting, 7. 12. 2010).

This is a secondary tension between two elements in the activity system between the subject and the rules. I place the tension between the subject and rules as we are looking at the tension from the point of view of the teacher, how he/she is expressing it. It seems as the teachers experience the strongest demand for covering the material as coming from the formal curriculum and the formal semester plan from the subject department that is based on the curriculum. However, it could also be viewed as an informal cultural demand from the community i.e. teachers in the subject department and the students in the class. The department demands that the teachers cover all the material according to the semester plan for example to make it easier to create one exam in the course and the teachers also gets demands from the students to cover all the material as it could appear at the exam. The teachers are, however, preoccupied with curricular demands as they point out and discuss that most both in the interviews about the changes from past to present and in discussions at the meetings about the present practice. It could also be that the teachers consider the demands from the community to be there primarily because of the demand from the formal rule i.e. the demand to cover the course description in the curriculum. It became a much stronger demand after the standardization of course description for all secondary schools in the general curriculum in 1999. If the course descriptions were made only by the teachers themselves in the school and not directly based on the course descriptions in the general secondary school curriculum, they would have more freedom to have the semester plan more adaptable to individual teachers and classes. This is the case in optional courses for students in the third and fourth year of study that are created in Sjárvarsíðuskólinn and not based on certain course descriptions in the general curriculum. For these reasons I place the tension between the subject and the rules.

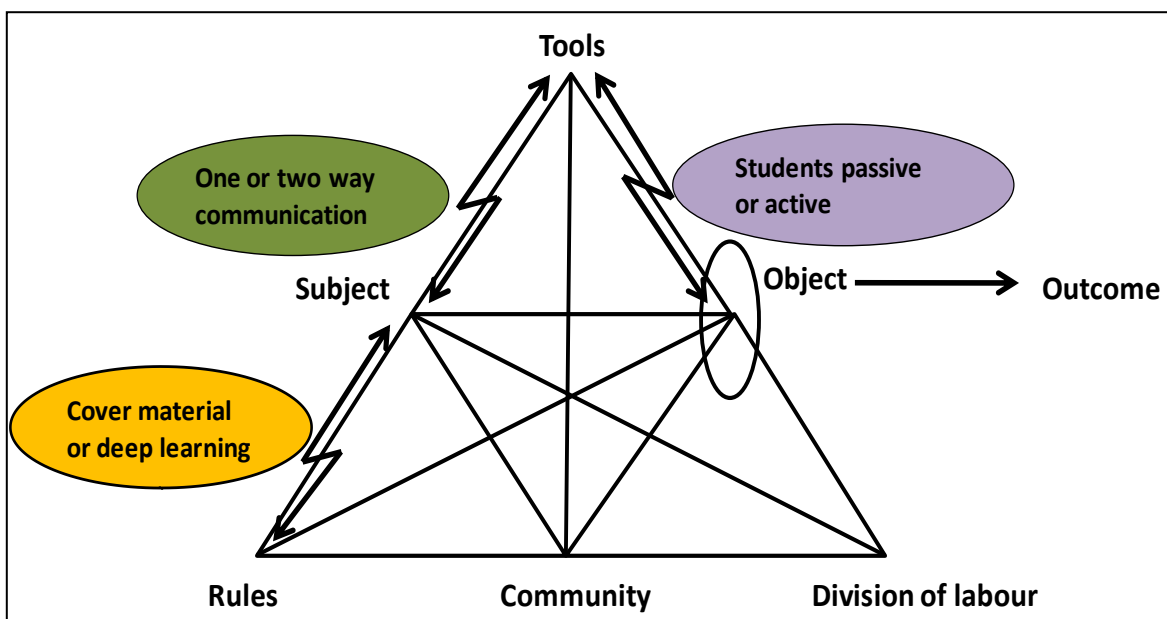
When the teachers were trying to solve this tension and move from coverage of lesson material towards deep learning through for example project work and out of school field-trips the teachers have experienced a new tension between subjects or themselves and the community, their co-teachers in other subjects who are teaching the same class or the same student group in optional courses. Because of the strict school time table the field-trips and out of school visits project work often requires the students to get time off in other subjects or the students get so wrapped up in the project work and preparing the trips that they push aside the work in other subject for some time. Teachers sometimes need to postpone or cancel their classes and complain about this as the following example shows.

Andrea (40+ Mathematics 6) says:

I consider this project learning great but a little criticism is necessary. There was a great disturbance because of this optional course. I think this is very interesting, I think it is great but the other teachers had to postpone and cancel and postpone and postpone because there was a great disturbance. But perhaps it is possible to find another way? There was a great disturbance because of the trip abroad and the collection of money before and after the trip (Meeting 15. 04. 2010).

This reveals the restrictions that the time table system puts on many innovative attempts by the teachers and one can say that the new tension is both between the subject, the innovative teachers and the rules, the school's time table and the community, the co-teachers of the student group.

In Figure 11-2 the placement of the main three tensions, teachers are experiencing in the present, is shown within the activity system of the classroom.



(Adapted from Engeström, 2001)

Figure 11-2 Tensions in the activity system of the classroom.

These three main tensions described above are interwoven. This implies, for example that when the tension between covering the content and deep learning deepens when the teachers are trying to solve the first two tensions between passive and active learning and one and two way communication. The first two tensions are very closely connected. The tension between active and passive learning is directed at the object of learning while the tension between one and two way communication is directed at the subject, the teacher. The teachers seem to be experiencing one way communication leading to passive learning or acquisition of knowledge but two way communication more likely leading to active and creative students' learning. All the participants have experienced at least one of these tensions either in relation to the changes from the past to present or in relation to their present practice. Their experience does not seem to be depending on age, sex, length of teaching experience in the school or their teaching subject.

The participants in the Change Room tried to solve these tensions they were experiencing in their practice by trying out new tools or instruments in classroom practice through their action research projects. In the next section I will describe the teachers' ideas about the changes and their efforts to change their classroom practice through their action research projects. Two main themes emerged from

the data i.e. the teachers were mainly trying to increase the responsibility of students' in two ways; firstly through active learning and secondly by listening to student's voices. Under the theme students' as active learners I like to present two concepts i.e. students' ownership and students' boundary-crossing and give examples from the action research projects how these changes have been carried out in classroom practice. Under the theme of listening to students' voices I present two concepts, activation of students' ideas and consultation with students, and give examples from the action research projects illustrating how these changes have been carried out in classroom practice.

11.4 Teachers' changes in classroom practice

In the action research projects of participants in the Change Room I have identified two main themes. The teachers are trying to enhance students' active involvement or participation in the learning process in the classroom and they are listening to the students' voices regarding both the new methods the teachers are trying out in the classroom and also the students' views in general on their experience of the classroom practice in the subject.

11.4.1 Students as active learners

In trying to solve their tensions all of the participants who introduced their interventions tried out new ways to engage students in learning through various assignments, peer work and methods that required two way communication and sometimes also involved student's deep learning.

To engage students in the learning process is not a new idea in classroom practice. It has its roots in Dewey's theory about learning by doing (Dewey, 2000), Vygotsky's theory on learning as a social process (Vygotsky, 1978) and Lave and Wenger's theory on situated learning (Lave & Wenger, 1991). Vygotsky's theory of learning as a socially mediated action supports a shift in the focus of classroom practice from teaching to learning (Webster-Wright, 2009). Other theories e.g. of multiple intelligence by Gardner and emotional intelligence by Cole also support this development (Forde, et al., 2006). The increasing focus on learning and students' participation changes the tasks of the teacher in the classroom as we will see from the descriptions of the teachers' action research projects below.

Some recent writers on active learning put emphasis on students' taking part in learning activities i.e. more than listening and note taking. Prince (2004) defines active learning as "any instructional method that engages students in the learning process" and the core is the activity itself and engagement in the process. Beloff Farrell (2009) puts emphasis on involvement when she describes active learning:

Active learning, a participatory form of educating students where the teacher creates conditions so that students can take charge of their own learning, moves the learner beyond the role of passive listener and note taker (Beloff Farrell, 2009, p. 2.).

Allen, Taylor and Turner (2005) define active learning as "meaningful learning, in which something of interest and value to the learner has been accomplished and understood" (Allen, et al., 2005, p. 258). And they also define it as "purposeful interaction with ideas, concepts and phenomena" (Allen, et al., 2005, p. 260).

Barnes (2008) points out that active learning involves the student in actively constructing new meaning. He explains how active learning involves the processes of:

attempting to interrelate, to reinterpret, to understand new experiences and ideas ... by using the new ideas, experience or ways of thinking in order to reorganise his or her existing pictures of the world and how it can be acted upon (Barnes, 2008, p. 2-3).

Barnes (2008) argues that active learning is best nurtured through students' talk, especially what he calls "exploratory talk" that involves sorting out one's own thought and understanding through discussions where the students get opportunities to ask questions, test their thoughts and try out explaining and reasoning their ideas. Allen et al. (2005) also see students' discussions as essential in active learning and especially when they involve students' reflection on their learning material and learning process.

All of the teachers who participated in the Change Room were trying out new methods to increase students' active learning by enhancing the students' active participation in the learning process in the classroom.

Students' collaboration and cooperation

One way they did this was through peer group work with students' collaboration and cooperation in various assignments.

In her action research project Íris (50+ Danish 19) tried out various group work with two classes in the second year learning Danish for their final exam. One assignment was a group collaborative work that involved both a written report and a verbal presentation in front of the class. The students could themselves choose the subject for this assignment and were given time in the computer classroom to work on it with assistance from the teacher. Íris concluded that this assistance in the classroom had the effects on less able students that they became more likely to be able to finish their assignments and getting better outcomes (Meeting 10. 5. 2011).

Another assignment involved students in cooperative learning about short stories they had been reading in Danish. It was group work with four students in each group with four different roles and all the students had to experience playing all the roles. The project lasted for two weeks.

Íris commented on this cooperative assignment:

Just really great cooperation and more, they [the students] worked much faster than when I am going through the stories with them as one did before.... They were quick and they had fun (Meeting, 10. 5. 2011).

Regarding the impact on the outcome in the course on students' grades this emphasis on students' assignments had positive effects according to Íris evaluation, especially the less able students were getting higher grades (Meeting, 10. 5. 2011).

In her action research project Nanna (50+ Biology 0) tried out various group assignments with students in the first year Social science department, for example a learning game about the human body, creative play about the blood system and clay modelling of a cell and all its organs with name tags for each organ. (Víkingsdóttir, 2011a). All these assignments involved student collaboration.

Nanna introduced CLIM in her classroom. CLIM (cooperative learning in multicultural groups) is one of the methods of cooperative learning that Nanna prefers in the classroom because of its creative element, strict time limits of each part of the assignment and that each participant has a certain role that is necessary to stick to. Therefore all the students are active and there is no longer the problem of “passengers” in the group work i.e. students that are not active and let others do all the work. At the end, each group is encouraged to present the results in a creative way, for example through music, play, poem or poster.

Nanna tried the CLIM approach when teaching about the human body. In each group there were five to six students and the assignments were as many as the groups in the class, each addressing one system of the body’s organs. Each group works on one part of the assignment in an 80 minutes long class period and as all the groups do all the different parts of the assignment it takes a total of five 80 minutes long lessons to finish the assignment if the groups are five (Víkingsdóttir, 2011b).

Nanna was satisfied with the outcome of her project. She experienced more students’ participation in the learning process, students becoming more active performers in the classroom and more interested in the subject.

Nanna concluded:

My experience of this assignment is very good. Students consider this work as both useful and enjoyable and often they show great performance in their presentations. When they have understood the work process and that they have very limited time to finish assignments, they become very active and work purposefully towards finding solutions (Víkingsdóttir, 2011b).

Ownership of learning

Nine of the participants in the Change Room were increasing students' active learning by enhancing the students' feeling of ownership of their learning. This the teachers did, for example by students' presentations of the outcome of their learning to others in front of their class, in front of visitors from Denmark, on the walls in their classroom, on the intra net, on the school's homepage or to residents in a care home for the elderly. These presentations and publications had the aim of increasing the students' responsibility for their learning.

Helena (30+ Icelandic 1) put the students' material on the intra net in Sjárvarsíðuskólinn where all the students could access it as learning material. Helena pointed out "The students are editing their own learning material". This databank was called "Interesting in the eyes of the students".

Helena said:

That material became part of learning material for an exam and it had positive effects. Students saw it rewarding to get their name in the databank; it made them proud and had positive effects (Meeting, 18. 11. 2010).

A month later, Helena said at a meeting in the Change Room:

At our last meeting I told you about the students' databank and now I have given the students an exam. I would like to point out that the exam questions in which I asked directly from material in the databank gave far the best results on the exam. This is their own and it has so much impact (Meeting, 7. 12. 2010).

Here Helena makes a direct connection between putting the students material on the intra net and better outcome in the exam. This could indicate that when students have a feeling of ownership of their learning it increases their responsibility for their learning.

Gunnar (50+ Mathematics 7) is trying to activate students learning in the spirit of reading mathematics. He does that by approaching it not only through traditional mathematical exercises but also through getting the students to learn mathematical

concepts through creative assignments. He also encourages students to present their assignments on the walls in the classroom but many classes of students use the same classroom during the week.

Gunnar describes:

I would have liked to work more in the spirit of the school counselling. That is to enable the students to discover the answers and the learning material themselves, rather than delivering it. I have been trying a few times over this winter to let the students work two or three together and define a concept and do an exercise together. They use colour paper and pencils and draw a picture of the concept. Then they present it and put on posters on the walls in the classroom. I am not explaining it a lot at the board, rather letting them deal with it, trying to pull the material through them rather than pouring it into them, I consider that a stronger method (Meeting, 10. 05. 2010).

Rakel (40+ Icelandic 4) used various kinds of student assignments when teaching expression for example pronunciation exercises, dramatic expression, creative writing, composing their own poetry and their own short play. In all instances, the students presented their projects in front of the class to enhance their expression skills (Meeting, 7. 12. 2010). Rakel evaluated the outcome by looking at how the students felt about the expression learning process. She concluded that the students were happier and showed more interest in the learning. She did this by reading the students' diaries and she also asked the students to answer some questions at the end of the semester and their answers to these questions were anonymous. All the students except one gave a very positive response towards learning expression and some pointed out which aspects of the learning process worked well.

One student said:

It is good to get a practice in speaking in front of others and it helps to get a critique, positive and negative (Torfadóttir, 2010).

Another student described:

It is of course always stressful to speak in front of people but it was useful to hear from others what you did wrong for example fiddling with your hair, say often the same cliché: “do you get it?” “do you understand?” “you know”. Therefore it is also good to watch yourself on a video because often you don’t notice these until you see for yourself your nervous habits (Torfadóttir, 2010).

The poem composition was favoured both by the teacher and some students. A student wrote in his diary on the 12th of January 2010:

Today we did an assignment in expression and the history of literature that I thought was clever. We composed a poem and introduced it. The poems were joyful and the class was great. It is clever to twist these two together because the history of literature is so boring (Torfadóttir, 2010).

At a similar time Rakel seems to come to a similar conclusion regarding the poems as she wrote in her diary on the 18th of January 2010:

What I thought worked best were the poems composed by the students that they recited in an original way and played with the text in the spirit of the “sound poems” of Eiríkur Arnar (Torfadóttir, 2010).

Students’ boundary-crossing

Four participants encouraged active student learning through connecting students’ project work to out of school learning experience i.e. students boundary-crossing out of the traditional classroom to another territory, expedition to an institution, a school visit to a foreign country, and conversations on Facebook.

Mist’s project involved the students’ in leaving the classroom and entering the real world, experiencing a new social encounter in a care home for the elderly. Students in Icelandic, in their fourth school-year visited the care home three times and discussed in pairs with one resident about the resident’s life and their

experience of literature and poems. In the last visit the students gave the resident their written report about the project that will have enhanced their feeling of ownership of their learning. The aim of the project was to bridge the gap between generations and give the students an opportunity to connect their studies of the history of 20th century Icelandic literature with the life-history and experience of people born early in the 20th century.

Mist says:

The aim is to see if the old people can give the students a new understanding from a different standpoint in their learning. ... The aim is of course to break the generation gap in a way. I feel that these kids are locked in their world of equal age group and equals. They talk together on Facebook and their world becomes closed because they spend so much time only with each other.

Mist connected together the visits to the care home, the interviews with the old people and the classes in school by letting the students prepare their visits in class and give an oral report on their visits in class and the class discussed their experience and that was very successful as described in the section 11.5.1 on Mist's action research project.

Sandra and Bjarki's project in the optional course Christian IV evolved around students' project work and a study trip to Denmark. This project also involved leaving the classroom and entering the real world, experiencing a new social encounter in a foreign country. The students stayed in the homes of Danish students for a week. There was a program for the group during the day but in the afternoons and evenings they spent time with the Danish students and their families (Meeting, 15. 4. 2010).

The teachers wanted the projects to have practical value and published the end products of the students' projects on the school's website in order to increase the students' responsibility for their learning. The students also gave short presentations of their projects to the students from Denmark when they returned

the visit and stayed in the homes of the Icelandic students for a week. The students found it difficult and they decided to give the presentation in English.

Bjarki describes:

They had prepared it [the presentation] when they [the guests] arrived but 20 minutes lasted before we got the first group at the blackboard. Then it started to roll and in the end they all finished their presentations (Meeting, 15. 4. 2010).

With the publication of their projects and the students' presentations it is also likely that the students' feeling of ownership of their learning has increased.

Andrea (40+ Mathematics 6) created a space for learning outside the classroom by creating a social network on Facebook for each class she taught. Andrea had been experiencing that the students were coming unprepared for the classes and had shown very little activity on the school's intra net where she put all the information and extra material for the course. She wanted therefore to find a way to enhance the communication between herself and the students and increase students' activity on the intra net (Meeting, 10. 5. 2011; Manolescu, 2011).

Andrea created a closed group on Facebook for each class she taught. There she put information about the material she put on the intra net, reminded them of homework and exams and had discussion with students about mathematical issues (Meeting 10. 5. 2011).

Andrea concluded that the effect was great, it increased the students' activity on the school's intra net.

Andrea summarized the outcome:

This was really effective; it enhanced the information flow between teacher and students and also between the students themselves about their learning and the course. Students became more active on the intra net, they used the additional material more and asked questions regarding the text. I also saw that they were better prepared for the classes.

Andrea also concluded that the Facebook groups enhanced communication between herself and the students, she felt more closeness and that she got to know the students better by following their conversations and commenting whenever she thought appropriate (Meeting, 10. 5. 2011).

It can be concluded that by creating a learning space on Facebook, Andrea got the students' attention and together they crossed the boundaries of the traditional classroom and entered a new territory for learning. The students spend a lot of social time on Facebook and probably view it as their territory and feel comfortable there. Whatever the students are doing on their phones, Ipads or computers Facebook is very often open and available to them for communication.

Writers emphasise the positive effects of active learning when summarizing the literature on research on active learning. Bonwell and Eison (1991) conclude that active learning leads to improvements in students' thinking and writing skills and enhance the students' attitudes towards learning. Prince's (2004) conclusion is that active learning through collaboration, cooperation and problem based learning improves students' achievement, attitudes, social skills, self-esteem and study habits. Beloff Farrell (2009) points out similar effects of active learning at all school levels but she also stresses the effects of "practical proficiency" that she considers important as the new global economy "require individuals who can multi-task, work collaboratively with others, critically think and problem solve" (Beloff Farrell, 2009, p. 4). Allen et al. (2005) put emphasis on how active learning enhances social skills through providing opportunities for all students to communicate with their peers, and participate in team work but they also argue that it leads to more "personal satisfaction".

11.4.2 Listening to students' voices

It is important to listen to the students' voices in order to understand better the ways in which the school practice influences students learning and by that to be better able to develop and improve classroom practice. It is important to listen to students to connect the school practice better with their social reality and interests and to show recognition of the importance of their developments as individuals (Rudduck & Fielding, 2006). It has also be argued that good practice must be

informed of students' needs and therefore teachers must listen to their voices (Kane & Maw, 2005). It is time to give students the authority to actively participate in the school's development by analysing and thinking metacognitively and critically about their learning process (Cook-Sather, 2002).

Certain kind of dialogic relationships between teachers and students are both possible and necessary if student perspectives are to be honest and productive of real change (Fielding, 2007, p. 325).

The aim of listening to students' voices is to enhance their self-esteem as learners and increase their ambition and longing to succeed. It is a democratic process and it increases the likelihood that they experience a feeling of belonging to our learning community (Fielding, 2007).

However, it has also been pointed out that it is not always an easy thing for teachers to listen to students' voices, they become vulnerable and it may cause teachers anxiety (Rudduck & Fielding, 2006). Cook-Sather (2002) has also pointed out that listening to students voices calls for rethinking the power structure within the classroom.

Listening to students' voices was done in the action research projects of thirteen of the participants in the Change Room. It was done in three different ways, firstly by students' evaluation of the teaching and learning, secondly by allowing students to make decisions about the composition of the assessment and thirdly by activating students' ideas. All these methods enabled the students to influence their learning environment.

Students' evaluation of teaching

One way to listen to students' voices was done through the student's evaluation of the teaching and learning both in general and evaluation specifically of the new methods teachers were trying out in their action research projects. They used both open and closed questions in questionnaires or discussions with the students in the classroom. It can be seen from the teachers' presentations of their action research projects in the Change Room that students' evaluation has increasingly

become a part of their action research projects and perhaps as a result of that consultation teachers have increased their cooperation with students about the teaching and learning process.

Elísabet (30 Geology 1) comments on the consultations with her students:

One is not frightened to listen to the kids, ask them their opinion and take into consideration. I think it makes things better. Yes, get closer to them and it is exactly because of the action research (Meeting, 7. 12. 2009).

I took a pause every now and then, just stopped and asked: What are you learning? What do you think of the teaching? What are my pros and cons? What are your attitudes towards the subject? I think what matters the most is the voice of the student, that he or she has a saying. It also matters for the class spirit that they feel their perspective valued (Meeting, 31. 03. 2011).

The relationship with the students is not only important for consultation but also because Elísabet values highly to be in good contact with the students and she sees that as one of the strengths she brings to the teaching job:

What I feel my main contribution is that I reach the students well. I think they like me on the whole. ... This feeling of connection to them is incredibly important (Meeting 7. 12. 2009).

Some teachers use students' evaluation of the teaching methods to get ideas about how to improve the methods in practice and to be able to better meet the needs of the students.

Andrea (40+ Mathematics 6) describes:

One and a half years ago I started to do a small course survey in the middle of the semester, about one and a half month into the semester to help me understand the students better and to look into whether the teaching methods I use are appropriate for each class because the classes are not all the same. ... This survey

helps me a lot, it is of course anonymous and I get ideas from the kids. One of the questions is: What changes would you like to see? What will you put forward? (Interview 13. 1. 2010).

In one subject department, Chemistry, the teachers Oddur (50+ Chemistry 7) and Katrín (20+ Chemistry 2) were developing the use of student learning portfolios as a new assessment method. They both involved students in some classes in the process of organising the structure of the portfolio and they also asked all their students in the first and second study year to evaluate the portfolio and some of the assignments put into the portfolio, see tables 11-5 and 11-6 below. The portfolio should include all the work of the student over the semester, the study plan, chapter exams, notes, assignments, self evaluation and definition of concepts. The portfolio as an assessment method can be viewed in line with changes in Oddur's attitudes towards student assessment as he had come to favour continuous assessment over final exams as the following remark indicated:

Oddur explained:

I have become much more student centred and more open for continuous assessment rather than traditional exams (Meeting, 7. 12. 2009 Pair interview about the past).

Oddur concluded that the use of the student portfolio was successful but a lot of hard work and more time consuming for the teacher than the traditional final exams.

Oddur said:

It is fun and giving but it is very time consuming and requires very good organisation (Th. Guðjónsson, 2009).

		Average all classes		
		All	Girls	Boys
Question	Learning portfolio in Chemistry			
1	I learned a lot about the context of things in Chemistry	3,5	3,5	3,5
2	I learned a lot about concepts and the language of Chemistry	3,7	3,7	3,7
3	I liked to learn Chemistry by using the portfolio	3,4	3,9	3,1
4	I liked creating my own lists of concepts	3,0	3,5	2,7
5	It was difficult to interpret the concepts in my own words	3,2	3,2	3,1
6	It is difficult to put together and maintain the portfolio	2,5	2,0	2,9
7	It is difficult to create examples of new concepts	3,1	2,9	3,2
8	The work on the portfolio made me feel as I showed initiative in my learning	3,3	3,5	3,1
9	The work on the portfolio helped me to understand what needs to get results in learning	3,3	3,6	3,1
10	I learned a lot of the work on the portfolio	3,4	3,7	3,1
11	I had fun working on the portfolio	3,0	3,5	2,7
12	I recommend that the portfolio will be used next school year	3,8	3,9	3,6

(Th. Guðjónsson, 2009)

Table 11-5 Students views on the learning portfolio in Chemistry by sex.

		Average all classes		
		All	1.study year	2. study year
Question	Learning portfolio in Chemistry			
1	I learned a lot about the context of things in Chemistry?	3,5	3,5	3,5
2	I learned a lot about concepts and the language of Chemistry?	3,7	3,8	3,5
3	I liked to learn Chemistry by using the portfolio	3,4	3,4	3,5
4	I liked creating my own lists of concepts?	3,0	3,0	3,1
5	It was difficult to interpret the concepts with my own words?	3,2	3,2	3,2
6	It is difficult to put together and maintain the portfolio?	2,5	2,4	2,6
7	It is difficult to create examples of new concepts?	3,1	3,1	3,0
8	The work on the portfolio made me feel as I showed initiative in my learning?	3,3	3,4	3,0
9	The work on the portfolio helped me to understand what needs to get results in learning?	3,3	3,4	3,2
10	I learned a lot of the work on the portfolio?	3,4	3,4	3,3
11	I had fun working on the portfolio?	3,0	3,2	2,8
12	I recommend that the portfolio will be used next school year?	3,8	3,9	3,5

(Th. Guðjónsson, 2009)

Table 11-6 Students' views on the learning portfolio in Chemistry by year of study.

Oddur's conclusion was that the students favoured the portfolio and the majority recommended its use again next school year. The girls were more positive than the boys and the students in their first study year were more positive than the students in their second study year. Students in three of five classes in the first study year and two of four classes in the second study year participated in the organisation of the portfolio but no difference was found in their views towards the portfolio (Th. Guðjónsson, 2009).

In one subject department, Citizenship, the teachers listen to the students' voices in order to evaluate each theme of the subject. Dagmar (50+ Citizenship 9), one of the participants was planning to use the students' answers for changing her classroom practice in Citizenship. She is developing Citizenship as a subject, both the material that is covered and the methods used for teaching and learning Citizenship.

Dagmar describes:

Students in Citizenship write a diary at the end of each theme or chapter. They answer questions like: What is most important about the material you were learning? What did you learn from this? What did you consider positive about this material? What was negative? And they find arguments for their answers. They also evaluate their own performance, 140 students. The idea is to analyse their answers and listen to the voices of the students. This will help to develop Citizenship as a subject (Meeting, 6. 10. 2010).

Consultation with students was also done by Ingunn, a school leader, in her action research project. In the spring of 2009 it was decided to change the school rules and create a new grade for actual attendance that would be calculated in the students' performance grade in each subject. The student needed to be physically present in order to get actual attendance, there were no legitimate absence taken into account. Ingunn found out from the staff survey in the spring 2010 that 81% of teachers were very or rather in favour of the new rule of actual attendance. On the other hand 73% of students in the third year were rather or very dissatisfied with the new rule of actual attendance according to a survey conducted in all classes in

the third year, especially how fast the grade decreased when the students were sick (Erlingsdóttir, 2011).

Individualising students' assessment

One of the participants, Jónas (40+ Mathematics 11), individualised students' assessment in a course in Mathematics. It was called alpha - beta - gamma ($\alpha\beta\gamma$) by Jónas, the teacher, when the weighing of components in the final grade of a course varies between individual students. The students could choose between three different compositions of weight of final exam and semester work; first alpha (α) with final exam 70% and semester work 30%, secondly beta (β) with the final exam as 60% and semester work 40% and thirdly gamma (γ) with the final exam and semester work both weighting 50%.

This idea came about as the teacher's reaction to a tension over the assessment results in the autumn semester especially the exam results. In class discussion about the assessment one student asked if the assessment could not be different between the students. The first reaction from the other students was rejection but Jónas, the teacher, decided to consider it further and he developed the idea of alpha - beta - gamma ($\alpha\beta\gamma$) some weeks later and carried it out for the first time that same semester. The next school-year, Jónas carried it out again in the same course but now from the beginning of the autumn semester and he concluded that the results were very good in both instances and almost all the students choose the best composition for themselves. Jónas said about the latter experience:

This was great. ... The anxiety had disappeared from the group and that led to that the group did rather well. We worked similarly in the spring semester. ... The aim is to influence how people work during the semester and increase by that active learning during the classes and the other aim is to lessen the exam anxiety.

One can conclude that alpha - beta - gamma ($\alpha\beta\gamma$) is a tool to enhance teachers and students communication about assessment and it is also a tool to increase student's sense of responsibility for their learning. Each students needs to reflect

on what kind of a student he or she is and what kind of composition of assessment is best suited for him or her.

Activating students' ideas

Three participants listened to students' voices by activating students' ideas in the classroom.

Mist (50+ Icelandic 22) developed a new teaching method through her action research by using students' material in a new way as was described earlier in section 11.2.1. It involved using various materials from the students directly as teaching material, for example their writing texts, compositions, poems, notes from diaries, answers to exam questions. Mist said that the students' answers gave good information to evaluate each intervention and a valuable insight into the personal effect of the lesson material on the students. However Mist took it one step further as she took the students' answers to questions about a novel they were reading and turned it into teaching material by putting the answers on power point slides and used it for class discussion about the novel.

Mist argues:

And by making a power point show of their anonymous answers and showing it to the class I could use their own "voices" as a platform for an open discussion in the class as well. And by putting their answers all together in such a context it also became a collective knowledge for the class as a whole and a new dimension in understanding, criticising and expressing the reading of the novel (Presentation in Sjávarsíðuskólinn, 9. 3. 2011).

Mist has repeated this method of giving students open ended questions about novels and bringing the answers back to the classroom for discussions many times and feels it always has a good effect on the learning atmosphere in the class.

Another version of using students' products as teaching material is what Mist calls "Poems hurl between classes". The students compose their own poems. The teacher collects them and puts them on power points and shows them to students in another class who evaluate and provide response and comments and the

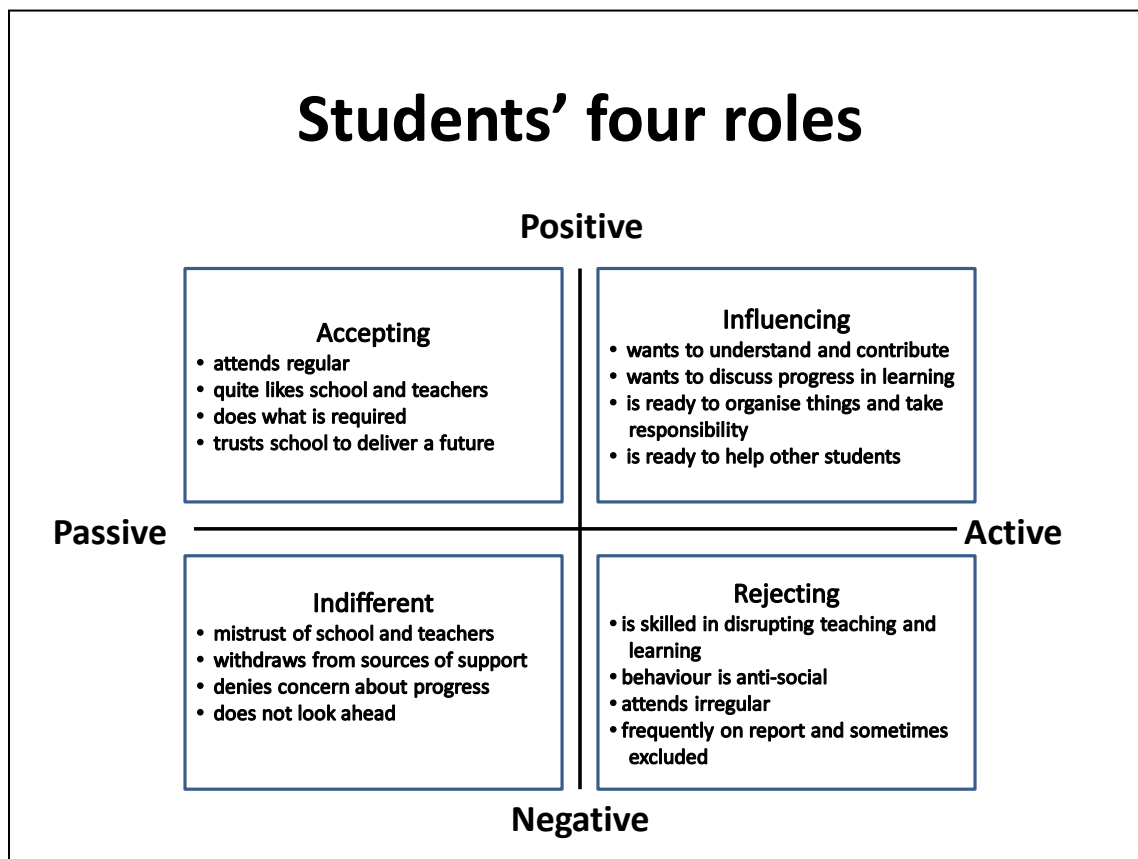
teacher takes it back to the students who composed the poems (H. Kjartansdóttir, 2010a).

Finnur (30+ English 2) activated the students' ideas in a class in third year Economic study line by giving the students themselves the assignment to select a text to read and create their own assignments from the text. The students of the class were split up into six groups and each group was to select one article in English, 1 - 2 pages long, about economic issues that could be used as a reading material in the English course. Finnur then chose one of the articles and the next assignment for the groups was to create assignments for the students about the material in the article (Meeting 18. 11. 2010).

By moving some authority from the teacher over to the students, the teacher is really enabling increased student commitment (Cook-Sather, 2002; Jónsdóttir & Sigþórsson, 2013; Kane & Chimwayange, 2013; Rudduck & Fielding, 2006). The students gain a better understanding of the complex process both of teaching and learning and are therefore more able and willing to take on an active learning role (Cook-Sather, 2002; Kane & Chimwayange, 2013). It is important that the students feel their opinion valued and that teachers reactions have to convince the students that their opinions have impact on teaching and learning if the students are going to take the consultation seriously (Jónsdóttir & Sigþórsson, 2013). Certain conditions must also be met within the school for the consultation with students to be successful, i.e. a climate of trust and openness is needed and a certain space and time is also needed.

Rudduck (2005) identified four roles of students i.e. accepting, influencing, rejecting and indifferent on an axes from positive to negative and an axes from active to passive, see Figure 11-6. These students' different roles were easily identified as realistic by the participants in the Change Room (Meeting, 10. 5. 2011). It was noted that the students' roles are not static, the students can move from one role to another over one school-years and that change of roles can be either temporary or permanent. The most desirable student role from the teacher's perspective is changing. In the traditional classroom where the lecture method was dominant the student's role of accepting, the positive - passive role was perhaps

the most desirable. Now on the other hand, when the emphasis has increased on students' participation, students' active learning and consultation with the students on the proceedings of classroom practice, the students' role of influencing, the positive - active role, is becoming more valued and appreciated by the teachers. Listening to students voices will encourage more students to take up the role of the influencing student or the positive - active role (Rudduck, 2005).



(Adapted from Rudduck, 2005)

Figure 11-3 Students' four different roles.

Instruction and learning are interwoven and interdependent in the classroom. Instruction creates opportunities for learning; teachers provide range of activities, situations and experiences for the students and by that create conditions for active learning. The focus is shifting from the teacher to the student or from teaching to learning. It appears that the teachers in the action research group are really making attempts to come closer to the students and giving weight to their ideas and opinions. The teachers in the Change Room are taking the first steps towards

creating their situated pedagogy of active student learning informed by attention to student voice.

Next I will describe in some detail two examples of teachers' action research projects in the Change Room, i.e. of Mist and Jónas. I will use the activity system of the classroom as a conceptual framework for that description. Shorter descriptions of thirteen other action research projects in the Change Room are presented in Appendix 12. In all the descriptions I attempt to connect together the tensions the participants were experiencing in classroom practice and the tools they used to try to solve these tensions.

11.5 Action research projects of individuals

11.5.1 Mist - Active and creative learning

11.5.1.1 Mist - professional development through action research

Here the focus is on the action research of Mist, a teacher in Icelandic. The heading of her project is: Active and creative learning. Firstly, I will give a general description of Mist and her professional development through her action research projects under the headings of the elements of the activity system of the classroom and secondly describe her latest action research project of students' visit to a care home for the elderly.

The following description is based on various data; an interview with the teacher, observations in class and out of school visits, photographs from the classroom visits and out of school visits, Mist's presentations of her action research project at a meeting in the Change Room, Mist's presentation at a conference at the School of Education in the University of Iceland (H. Kjartansdóttir, 2010a), a teacher story (Thorgeirsdóttir, 2011b), documents with assignments for students, student's products, article by Mist in a journal of the Icelandic teachers professional society (H. Kjartansdóttir, 2010b), Mist's participation in discussions in the Change Room and data that Mist collected herself for her research (students' anonymous answers to evaluation of assignments).

The subject - a teacher in Icelandic

The teacher Mist was 50 years old in 2009 and had been teaching Icelandic in Sjárvarsíðuskólinn for 22 years and is also a former student of Sjárvarsíðuskólinn so she has a very long experience of the school. She has a Masters degree in Icelandic from the University of Iceland. She has taken on various responsibilities over the years within Sjárvarsíðuskólinn as head of the Icelandic department, head of the field of humanities, head of teaching, project manager of school self-evaluation and project manager for students who visit Sjárvarsíðuskólinn from the School of Education at the University of Iceland. Mist has been professionally active and influential within the community of Sjárvarsíðuskólinn and on a systemic level. She has also been active in the action research group in Sjárvarsíðuskólinn and various developmental group works and through that and other responsibilities she has been in contact with the current pedagogical discussion at the School of Education.

Over the years Mist has moved her emphasis from teaching to learning and more and more put the students' active learning in the forefront. She has been trying out more diverse learning methods for students and is innovative in her classroom both regarding teaching and assessment methods as will be described under tools. She sees this as a positive change and links it to her participation in developmental projects within Sjárvarsíðuskólinn. She likes teaching and she wants to be spontaneous and is always trying to grasp each group's dynamics. Currently she is experimenting with activating students in small projects and group work, what she feels is her strong side in teaching (Interview, 4. 2. 2011).

The object - students' learning of Icelandic

The focus of learning is the subject Icelandic that is in the core of all study lines and is taught every year during the four school years of the studies for matriculation exam. In Icelandic students learn for example about reading, writing, expression, grammar, literature and the history of Icelandic literature.

Mist puts emphasis on working positively with her students rather than using formal disciplinary measures. She wants to make sure that she does not misuse her

power position and puts emphasis on maintaining discipline through conversations and positive attitude rather than force.

I think I have faith in the positive but not threats, punishment and army discipline. I try to stay on that side of the line. To praise, strengthen and support. Because the student's self-image is often weak and they are dealing with all kinds of difficulties that one doesn't know about. This is so sensitive and one can easily break them down (Interview, 4. 2. 2011).

Mist thinks this especially applies to learning Icelandic as the language touches their personality directly, i.e. how they write mirrors their inner person, feelings and values.

Mist has become more students centred and through the new teaching methods she is trying to give them a personal space for learning in an active and a creative way. Mist explains:

My aim has been to get closer to the students. I have put emphasis on respecting their views and I have become more concerned about their needs, interest and attitudes to the learning and the syllabus in order to make them more active, responsible and at the same time creative participants in their learning (H. Kjartansdóttir, 2010b).

Mist also puts emphasis on enhancing students' interest in learning as she describes:

I have become a little more preoccupied with how they feel about an assignment. Yes, whether it has really sparked their interest.... Yes, enhanced their development and helped them to see a new dimension in the syllabus that inspire them (Interview, 4. 2. 2011).

In order to try to achieve this Mist has been trying out various new teaching and assessment methods that will now be described.

The tools - teaching and assessment methods and teacher's pedagogy

Mist uses a variety of teaching and learning methods with the instruments of own voice, texts, music, pictures, the internet, the school's intra net, black-board and power-point. She uses individual, pair and group assignments and student discussions and presentations with emphasis on rubrics for teacher and students' peer- and self-assessment. Instruments that Mist would like to put more emphasis on in her classroom are the school's library for group work, illustrative material, students' practicing presentations in front of a group and students' discussions especially to practice debate about issues concerning the learning material. She would also like to increase the teaching of writing but she feels she lacks time for the continuous assessment required. (Small group discussion about the Present, 18. 3. 2010).

Mist has been increasing the use of various creative students' assignments for example a student's reading diary, creating poems, create their own books or journals with own work inside, create short stories and poems about the letters in the old Icelandic alphabet, runic writing, personify the letters and write about their history, convert an old poem into a cartoon history, create and play games about the content of the syllabus and changing learning texts by taking out one word and putting a different word instead.

Mist has developed a new teaching method through her action research by using students' material in a new way. It involves using various material from the students directly as teaching material, for example their writing texts, compositions, poems, notes from diaries or answers to exam questions. For example, she took the students' answers to questions about a novel they were reading and turned it into teaching material by putting the answers on power point slides and using for class discussion about the novel.

Mist argues:

And by making a power point show of their anonymous answers and showing it to the class I could use their own "voices" as a platform for an open discussion in the class as well. And by putting

their answers all together in such a context it also became a collective knowledge for the class as a whole and a new dimension in understanding, criticising and expressing the reading of the novel (Meeting, 9. 3. 2011).

Mist has repeated this method of giving students open ended questions about novels and bringing the answers back to the classroom for discussions many times and feels it always has a good effect on the learning atmosphere in the class.

Mist also sees the students as victims of the knowledge system, as she calls it, when they are forced to give only one right answer to questions on exams and fears it has negative effects on the interest of students in reading.

I have often had doubts about this form and particularly been worried about such in detail reading exams would kill all the pleasure students could experience reading the story. I have also experienced that students sometimes answer a different question than asked and show good knowledge of the story by directing their attention to other content items than asked about. But how are we to grade such answers? (H. Kjartansdóttir, 2010b).

Therefore she has been trying out other exam methods where there is not a need for one right answer to exam questions. She created an exam with series of 10 pictures and the students were asked to use their imagination to link them with the content of the story. Mist said that at first the students were surprised and the atmosphere electrified but then there was laughter because they found some of the pictures really amusing. Mist also felt this was a success.

It was a very amusing way of testing their reading and their answers gave me a lot of inspiration (Meeting, 9. 3. 2011).

These exams during the semester time is part of continuous assessment but have not replaced the final examination that is still a traditional knowledge exam with only one right answer to the questions and the final exam counts the most towards the final grade or at least 50 percent according to the school-rules.

Mist's own personal professional theory is developing. She is moving away from pedagogy where the role of the teacher is the knowledge transmitter towards the role of the teacher who creates learning situations and learning atmosphere for students and she is herself very much aware of this development in her teaching. Mist describes the development of her personal professional theory from didactic to more dialogic teaching methods:

I have mainly been trying to change my teaching methods. That is perhaps the largest change. I have tried to listen more to the students and the teaching has become more of a conversation with them and a dialogue. Not such one way communication as I was preoccupied with in the beginning. I have begun to break up the teaching and activating the students more. That is the basic feature in my work. I consider students as active learners have the responsibility for real learning to occur. So I am approaching the work more as a supervision of students rather than delivering some material (Pair interview, 7. 12. 2010).

The rules - cover syllabus and knowledge exams

It is considered important in Sjárvarsíðuskólinn and the secondary schools in general in Iceland to cover the syllabus both as it is presented in appropriate course description in the school's curriculum that is based on the general curriculum for secondary schools in Iceland from 1999 and in the department's semester plan for a particular school-year. In the semester plan the aims and content is described and also which text-books will be used as well as the composition of the assessment. In the fourth and final year of study the students get one grade for the final exam and one grade for work during the school-year, each weighting 50% in the final grade of the course. All three grades in each subject are shown on the matriculation paper.

The traditional final exams in May and December in Sjárvarsíðuskólinn are one and a half hour to two hours long knowledge exams. The final exam can weigh 50 - 95% of the final grade but usually it weighs 70-80% in subjects that continue the

next semester and 50% if the course is the final course in the subject. The traditional exam has exam questions where one right answer is required and where the student's knowledge and understanding of the subject's content is tested. During the semester time teachers have various exams, 40-80 minutes long both in class and on the Intranet that weight differently in final grade. Exams are used a lot by teachers over the semester time both as continuous assessment and also as a control instrument to encourage students to read the textbook and attend class.

These are the rules on assessment that Mist is confronting and as she acknowledges herself, the assessment methods have not changed as much as her teaching methods, perhaps because there she has more freedom. As described under tools Mist is beginning to try out new assessment methods but these are exercises on individual teacher's level over the semester time for continuous assessment but not for final assessment that counts most towards the final grade in the course. Therefore Mist is experiencing tension regarding the assessment that will be discussed later in this chapter.

The community - the department, the action research group and the class.

The community that influences and takes active interest in Mist's action research project is the department of Icelandic, the action research group and the classes of students involved in the project at each time.

The department of Icelandic is one of the largest departments within Sjávarsíðuskólinn with 5 teachers. Icelandic is one of three core subjects in the school, along with English and Mathematics. Icelandic is a compulsory subject in all study lines and is taught every year during the four school years. Three of the teachers are in the action research group. The teachers enjoy professional freedom in their classroom but in some matters they need to make decisions in collaboration with the other teachers in the Icelandic department. The main demands the department makes is to agree on a textbook and other learning material for examination, to cover the syllabus and to create together a final examination at the end of the semester. Within that frame the teachers have considerable freedom or leeway to develop their own teaching in the classroom.

Mist links her teaching development to two projects of professional development in Sjárvarsíðuskólinn. These are firstly her participation in a European Comenius project with the aim of developing and analysing students' learning methods and adjust teaching methods accordingly. Secondly, her participation in the action research group (Pair interview about the Past, 7. 12. 2009).

The division of labour

The division of labour is traditional in Sjárvarsíðuskólinn, the teacher is in charge, directs the work in the classroom and the students carry out the work according to the teachers demands. In relation to teachers' consultation with students then students sometimes ask the teachers to move dates for exams and assignments. Many teachers are though increasingly asking students for their opinion on various aspects of classroom practice and Mist is one of them.

Mist is moving her emphasis from teaching to learning as described earlier under tools and that development has led to the beginning of changes in the division of labour between her and the students in the classroom. She is trying to create a more democratic classroom where she is in the role of supervision and guidance and the students take active part in the learning process and have influence on various decisions made about the assignments and organisation of the work although the final decision is in the hands of the teacher.

The tensions from the perspective of the subject, the teacher Mist.

Mist is experiencing tensions in her teaching, firstly between her role as a teacher and the rules, both between coverage or deep learning and between one or many right answers to exam questions, secondly between herself and the tools, between one and two way communication of the syllabus and thirdly between the object and the tools, between the student as a victim or a creative learner. These will now be described in more details.

Subject - Rules Between coverage and deep learning and between one and many right answers to exam questions

The subject, Mist is experiencing tension between the coverage of the syllabus and providing students with opportunities for deep learning as the project in the care home for the elderly does which will be described in section 11.5.1.2. She feels she cannot change the coverage of the syllabus although she needs more space for students' projects.

Mist describes:

The mistake I am doing is not putting something else off the table. And that is actually always a restraint in these kinds of projects. The teaching semester plan is restricted to something completely different [than the action research project i.e. in this case the visit to the old people's home]. So when you start something like this there are conflicts and tensions (Interview, 4. 2. 2011).

Mist presents this as a tension between her ideas about good teaching and the rule of the semester plan and she also points out that the general curriculum in Icelandic has not been changed for 10 years and does not follow the societal changes.

This secondary tension between the subject and the rules could also be interpreted as a tension between the subject and the community as the teachers in the Icelandic department create the semester plan. Although the department provides a space for teachers to try out new methods it does not give them space to change the syllabus covered for the final exam. There are also other signs of tension between the subject and the community because two of the students complained in their anonymous answers about the teacher not teaching the history of literature and complained about the lack of giving notes on the history of literature. One student also asked about why other classes did not have to do the same project and if they needed to cover the same syllabus as them. This tension can be directly linked to the importance put on exams at the end of the semester and the

students are afraid of not getting as many notes to review for the exam as students in other classes.

The changes Mist has made in the teaching methods with increasing emphasis on active and creative learning in the classroom and homework has created a new tension in her work. The tension is both a secondary tension between the subject and the rules and between the tools and the rules and also tertiary because the students' formal assessment methods do no longer match the teaching and learning methods she uses.

Mist explains:

I think a certain problem is involved in that at the same time as my teaching methods have changed a great deal my assessment methods have remained the same. Learning achievements are still measured in overview tests of knowledge items (Small group discussion about the Present 18. 3. 2010).

As described under tools Mist is beginning to try out new assessment methods but these are exercises on individual teacher's level over the semester time for continuous assessment but not for final assessment on departmental level that counts most towards the final grading in the course.

The victim will get under in the system if they don't answer the questions at the right time [i.e. when the exam is held] (Presentation in Sjárvarsíðuskólinn, 9. 3. 2011).

When students read novels it is customary in the Icelandic department to give them a reading examination to test if the students have read the story and understood its content. This type of examination is considered to give information about the knowledge of the students and it is also not too time consuming to make and correct. Usually the exam is a mixture of closed multiple choice questions with one right answer and a few short open questions that also require one right answer.

Mist explains:

When I saw how disappointed some of my students became after the traditional exam I decided to ask my students completely different questions about the novel and I was not going to give them any points for their answers. I simply asked for their opinions on the novel, how they felt reading the novel and what feelings they had towards the characters in the novel and if the novel had any special meaning to them (Meeting, 9. 3. 2011).

These exams have not replaced the final examination with questions with only one right answer and that examination weighs most in the final grade in the course so the tension is only partly resolved. It is still to be solved on the departmental and the school level.

Subject - Tools Between one or two way communication

Mist has described how she was in the past under the influence of the ideology that the teacher possessed all the power and the student was the object for the power of knowledge. The role of the teacher was to force material on the students or the “victims” as she called them and the role of the students was to retell the material.

Now Mist has changed her view and is trying to lessen delivering knowledge by the use of the lecture method and increasing active learning of the students.

Mist explains her new point of view:

Yes, this narrow point of view that knowledge is a standardized package that you deliver to them. Yes, I want to try to let them create something from this package so they take it and learn and it becomes part of their own feelings, experience and understanding of the world (Interview, 4. 2. 2011).

This tension is closely linked to tension between the object and tools or between students as victims or active creative learners.

Object - Tools Between students as victims or creative learners

Through the developmental process of her teaching methods, Mist has put more and more emphasis on listening to the students' voices, something she emphasised strongly.

Mist reflects:

I am open for students' comments, wishes, their attitudes towards what is being done and then I try to learn from them and change myself partly to take a step towards their needs, interests and their working methods (Interview, 4. 2. 2011).

Mist links the beginning of this development partly to her data gathering for her action research projects.

Mist explains:

I have begun to use a lot of methods that involve using students' material directly in the teaching process. I think it is a change that has developed in connection with my action research. I use a lot of data, their [the students'] writing, compositions, poems etc. (Interview, 4. 2. 2011).

This idea of open questions about a novel came about as Mist's response to a tension she experienced after giving a traditional reading exam to a class of students. This method was described before under tools.

New conflict as a result of her changes in teaching methods has evolved as she feels they are more time consuming than the old methods where more time went into preparation but now much more time goes into processing the students' material to be able to use it in teaching and also evaluating all the students' products in their assignments.

The work has somehow blown out. I feel I always have more and more to do (Small group discussion about the Present, 18. 3. 2010).

Mist says:

Teaching of writing really shows good results but the authorities do not acknowledge the great amount of time that teachers need to use for read-through and assessment so such teaching can give even better results (Small group discussion about the Present, 18. 3. 2010).

Things on departmental and school system levels have not changed as her individual approach to teaching and assessment methods have changed.

The main tensions Mist is experiencing are in line with the main tensions the participants in the Change Room are in general experiencing as described in section 11.3.

Mist's experiments with creative assignments in the classroom led her to take a further step with a project where students' cross boundaries, leave the classroom and enter the real world to experience a new social encounter in this instance in a care home for the elderly. This action research project that she carried out for the first time in the spring of 2011 will now be described in some detail.

11.5.1.2 Mist - Student learning through a visit to a care home for the elderly

The students of the class in Mist's action research project are studying on the sociology study line in their fourth and final school year for matriculation exam. It is a class with 25 students, 12 girls and 13 boys. Besides their optional courses (can be 0-6 lessons per week) they attend 25 lessons in the week in 5 subjects, of which four lessons are in the subject Icelandic. Each lesson is 40 minutes long. The class has to move around the school over the course of the day as the subjects are taught in different parts of the school. Icelandic is taught three times a week, two times for 40 minutes and one time for 80 minutes.

Mist feels that it is harder now than before to keep the students in the fourth year focused at learning both in and outside the classroom. She explains it partly because the curriculum has not changed for ten years but at the same time many things have changed in the society with the new technology, partly by that the students can now find all the material on the school's intra net, partly because the

students have taken increased liberty in not showing up in class and they do not show as much interest in reading as before. She feels that in the fourth year the students have decided their path for the future and therefore what part of their studies they want to put their ambition in and some of them almost ignore other parts of their studies (Interview, 4. 2. 2011).

The heading of the assignment for the students was: Generations meet and talk about stories, poems and life. Students from two classes in the fourth school year visited a care home for the elderly and discussed in pairs or groups of three with one resident each pair or group. There were three visits, two interviews or conversations about the resident's life-history and their experience of literature and poems and in the third and last visit the students gave the residents their written report about the project.

The aim of the project as presented to the students was threefold. Firstly, to bridge the gap between the generations by providing the students with an opportunity to connect their studies of the 20th century history of Icelandic literature with the life-history and experience of people born early in the 20th century. Secondly, the aim was to enhance their language and communication skills by exercising communication with older people and to give and take in purposeful interactions that are not confined to the classroom. Thirdly, the aim was to enhance students' competence in collecting information from sources, process them and communicate in a clear and organised way (Interview, 4. 2. 2011; Handout to students).

Mist's action research project in focus here is a group assignment where the students cross the school boundaries and go and visit people at a care home for the elderly. Mist mentioned three factors that influenced her in creating this project. Firstly, the school's policy to increase emphasis on student assignments in the new curriculum. Secondly, the school's cooperation with a nearby compulsory school that involves boundary crossing through mutual students' visits. Thirdly her watching the building of the care home rise from the ground when cycling to and from home to work and wondering who would reside there. In the background is

her aim of creating possibilities for her students of active and creative learning processes.

Mist decided the students' groups for the project. She created mixed students sex groups and split up friends to make the project more challenging for the students. Mist connected together the visits to the care home and the classes in school by letting the students prepare their visits in class and give an oral report on their visits in class and the class also discussed their experience. Mist found the students' oral presentations in class between the visits particularly useful and positive:

What has been most successful is to see a new side of the students, how well they are doing and how good they are in presenting when they tell the class about their visit. And a certain empathy and warmth is created in the group when they discuss this. And of course they also make jokes and have a laugh about it, and I think it is alright. ... I think there is a beautiful spirit around it (Interview, 4. 2. 2011).

It was a very good atmosphere in the lesson; the students sat quiet, listened and showed interest in each other presentations by questions, comments and laughter. They all had been in the same new circumstances with similar experience although not exactly the same. Many were relieved that the visit had worked out well, perhaps better than they hoped for before they went there.

Mist felt it was important that the students would be proud and satisfied with the outcome of the project and that is one example of how student-centred her teaching has become.

I want it to work so they will be proud of having done this. I think actually that it is quite important that they will be pleased with themselves. That the product will be in a way so that they feel they have done something useful, that they have made a person happy with their contribution (Interview, 4. 2. 2011).

When the project began Mist had not decided how it would end and she considered many possibilities. In the end after consultation with the students she decided that the students should give the end product to each respondent in the last visit with a rose to say thank you. Usually it is only the teacher who reads students' products but in this case it was also read by the respondent at the care home and perhaps their relatives. The teacher hoped this would encourage the students to put more effort into the assignment and make them prouder of their work. The teacher decided to give the students an opportunity to choose if this project would count 5%, 10% or 15% of their semester mark and the end product would have to be of different length accordingly. She did this partly because partly to increase the students' sense of responsibility and control over the project and partly because the students felt that they had very different amount of material from the respondents to use in their written report.

Various problems arose in the project that Mist had to deal with and find solutions to, solve on the spot or between the lessons. Some were general problems teachers experience frequently e.g. as not being able to get access for students in the computer room when needed, hard to assess students' verbal presentations, some students missed class and/or an appointment. However, other problems arose because of conflicting interest of the school and the care home i.e. shorter time between students' visits than considered good for the students and sometimes staff had forgotten about the visits because of lack of information flow within the institution. But other problems were directly related to the nature of the project and communication between the students and the residents of the care home. One student refused to participate in the project because he was uncomfortable with old people in general and was given another assignment instead of this one. Two pairs of students were very unhappy about their respondent and were reluctant to go the second time. Two respondents were not ready to meet the students when they arrived for the second time and one resident died before the students' last visit to the care home.

The care home Mist's is in collaboration with was opened in 2010. This is a privately run care home in a new large house on five floors with common rooms on the ground floor and 11 homes with 10 people in each home on the first to fourth

floor, three homes on each floor except the fifth as there is also an outdoor garden on the top floor. Each household member has its own room with his/her personal belongings and a private bathroom. Guests can come anytime of the day to visit the household members and are encouraged to visit often and take part in the household's activities. Animals are allowed both for visit and to stay there with their owners.

Mist contacted the director who welcomed cooperation with Sjárvarsíðuskólinn and Mist's project and arranged a meeting with the occupational therapist who became the contact person at the home for the project. The occupational therapist arranged the visits, decides who each student pair visited and showed everybody around the home.

In her teacher story about the project of the care home Mist connects the success of the project to the students' boundary crossing.

Mist concluded:

A giving and a demanding project that connected the syllabus with living people who had themselves experienced the times covered in the history of literature. A new point of view on the syllabus demanded the students to take on more responsibility of their studies, put the syllabus in a new context and opened up a window into a new world outside the classroom. The project also aimed at enhancing students' competence in communication, expression, imagination and creation (A teacher story in Thorgeirsdóttir, 2011b, p. 24).

Mist asked the students for their opinion in class just before they went on their last visit to the old people's home to hand the residents their projects. In their anonymous answers the students showed their appreciation of the project. In 36 out of a total of 38 answers positive adjectives were used to describe their experience of participation in the project. The word "enjoyable" was used most often or in 14 of 38 answers. Other words they used were beautiful, brilliant, creative, demanding, different, diverse, exciting, fine, fun, giving, good, great,

informative, interesting, knowledgeable, new, original, positive, smart and splendid (Students' anonymous answers before the last visit, 14. 4. 2011).

Mist hoped that the project would bring to life the authors of the literature in the textbook through the old people's stories about the authors and themselves. Some of the students' anonymous answers indicated that they had experienced the connection between the project and the history of Icelandic literature as the following examples indicate:

It was enjoyable to hear the respondent's view of the authors of the 20th century. It brings more life into the syllabus.

One could connect the syllabus to earlier times and how it was to live during those times.

Varied and an enjoyable project. We spoke about authors and that was very useful for our learning.

It was enjoyable to connect the life of the person to the authors and their work.

We utilized very well what she said and I learned something about the poet she thought was the very best.

(Students' anonymous answers before the last visit, 14. 4. 2011).

Unfortunately other students did not see the connection between the project and the syllabus although they appreciated the project as these three answers indicate:

Great project and it was fun to give them the product. Even though it doesn't connect to the syllabus for exam it is fun to do something different.

I thought it was a fine project. Although one didn't learn anything from it and it will not help me in the exams. But it was fun and worked out well. Change from the traditional curriculum.

I am very happy about the product and that the respondents will get an opportunity and the honour of seeing it. I hope they will enjoy reading it and I feel very good if we have touched the souls of these people and had a good influence. On the other hand I feel that this project took too long time and I would have preferred to learn the syllabus. This affected my learning in Icelandic.

(Students' anonymous answers before the last visit, 14. 4. 2011).

The students experienced the conversations with the old people as the most exciting and at the same time also the hardest part of the project. Before the first visit nine of the students were asked about their expectations and their answers were directed at their respondents and showed that they had mixed feelings, some were positive and excited but others worried especially about if the interview would run smoothly and their respondent in the care home would be willing and able to answer their questions.

I hope and expect to get someone who is a poet addict and has many answers to my questions.

I am a bit stressed but also a bit excited because it can surely be fun to talk to old people. But I was also a bit frightened whether they are senile.

(Students' anonymous answers before the first visit, 21. 1. 2011).

Immediately after the first visit 11 students were asked about the visit and they were preoccupied with their respondents, some were happy but others disappointed.

This was a very fine visit. We were shown up to the second floor and there we met a woman. She started by saying that she hadn't gone to school and maintained that she couldn't tell us anything. Then we hadn't even entered her room. We talked for an hour and she could tell us a lot about her childhood and family.

The man we talked to was too old and it was rather difficult to keep up a conversation with him. He didn't talk about poems and authors and he said he couldn't be bothered to talk about it. So I felt rather uncomfortable during our conversation.

(Students' anonymous answers after the first visit, 21. 1. 2011).

The students were also preoccupied with the respondents themselves in their class presentations, talked about their life-history and their knowledge and interest in authors. At first some felt the conversations with the old people hard or confusing but later they felt better, discovered that they could handle the situation and realized its usefulness.

In the students' anonymous answers before the last visit the main consideration of the students were the respondents, as 21 of the 38 answers evolved around them. Most of the answers were positive but five mentioned some difficulties regarding the respondents. Here is an example of a positive answer that indicated that the aim of making the students proud and satisfied has been fulfilled:

I found the project beautiful. It was fun to talk to the old people and to be able to make them happy with our visit. I felt it was nice to get to know someone who had a story to tell, someone outside the family. The project was a great success and looked very well
(Students' anonymous answers before the last visit, 14. 4. 2011).

Only two of the 38 answers were negative but 21 students pointed out some part of the project that might have gone better but also praised it and described some positive aspects of the project. Ten students mentioned that the project took too much time, seven that it did not help them enough with their studies in Icelandic literature, six mentioned that it was hard in the beginning, five experienced difficulties regarding their respondents and one wanted to choose the student partner.

One can conclude from the students' answers that they enjoyed participating in the project but many felt it difficult as it involved changes from traditional learning, both going out of their comfort zone i.e. the classroom and communication with a

stranger who was from a different cultural set so it needed a special effort. The hardest part in the students' learning process was to transfer their learning from the interviews over to their syllabus and link together the old people's life-history and the history of Icelandic literature. Their answers also show that they want to point out how the teacher can make the project better the next time and that indicates both that they want the project to be repeated and that they are not frightened to give their opinion and believe that their opinion matters and will be taken into an account.

In Figure 11-4, Mist's action research project is visualised in the activity system of the classroom where both the tensions are shown in oval shaped boxes and the tools used when trying to solve these tensions through changes in classroom practice and factors influencing that process are shown in rectangle boxes.

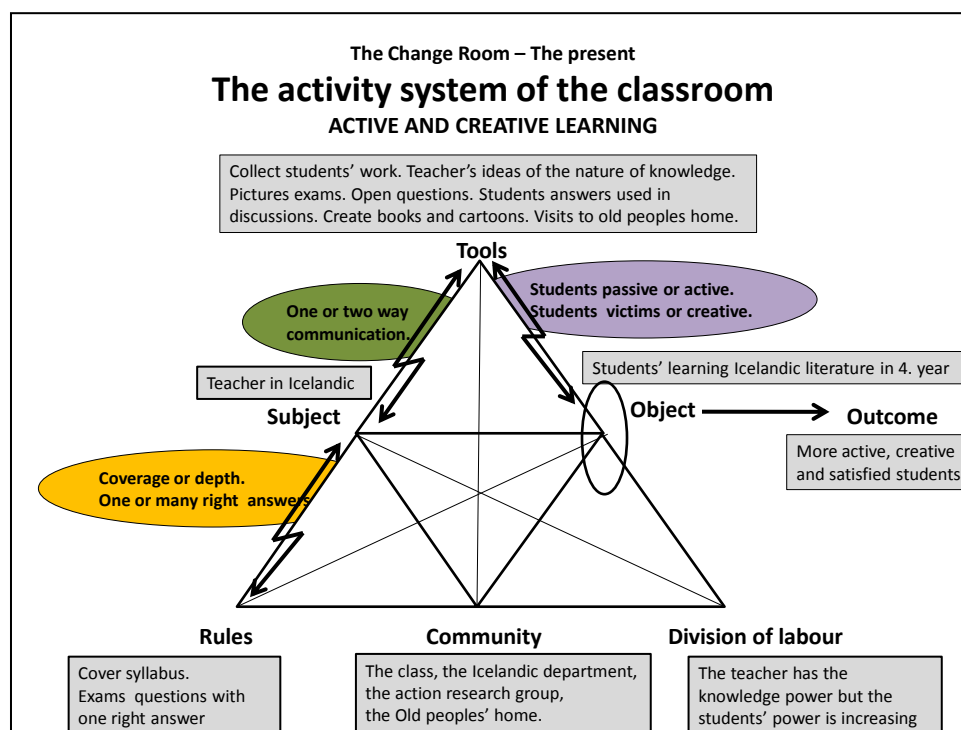


Figure 11-4 Action research in the activity system of the classroom. Active and creative learning

11.5.2 Jónas - Alpha-beta-gamma - Cooperation with students on assessment

Here I will describe the action research project of Jónas, alpha - beta - gamma - Cooperation with students on assessment. The following description is based on Jónas presentations of his action research project at a meeting in the Change Room and at a teacher meeting in Sjárvarsíðuskólinn, two reports Jónas wrote about his project (Ásgeirsson, 2010, 2011) and Jónas participation in discussions in the Change Room.

Jónas, who is a teacher in Mathematic, was aged 45 in 2009. He had then taught for 11 years at Sjárvarsíðuskólinn both Mathematics and Philosophy. Before that he taught at another secondary school in Iceland.

Jónas named this assessment procedure alpha - beta - gamma ($\alpha\beta\gamma$) when the composition of student's assessment varies between individual students i.e. the weighting of components in the final grade of the course varies between individual students. The students could choose between three different weights of final exam and semester work. Firstly, alpha (α) with the final exam weighting 70% and the semester work weighting 30% of the final grade. Secondly, beta (β) with the final exam weighting 60% and the semester work weighting 40% of the final grade in the course. And thirdly, gamma (γ) with the final exam and semester work both weighting 50% each in the final grade (Ásgeirsson, 2010).

Those students who choose gamma were choosing to decrease the weight of the final exam and increase the weight of student's assignments, the teacher's subjective assessment of the student's performance in the classroom during the lessons i.e. "active work and positive attitude in class" and actual attendance in lessons.

Type of assessment	alfa (α)	beta (β)	gamma (γ)
Final exam	70%	60%	50%
Assignments	25%	30%	35%
Assessment of active work and positive attitude in class	0%	5%	5%
Attendance	5%	5%	10%

(Ásgeirsson, 2011, p. 2)

Table 11-7 Weight of assessment type in alpha - beta - gamma.

This idea came about as the teacher's reaction to a tension over the assessment results in the autumn semester especially the exam results and it was evident that the students with exam anxiety were particularly dissatisfied with the exam results. In class discussion about the assessment one student asked if the assessment could not be different between the students. The first reaction from the other students was rejection but Jónas, the teacher, decided to consider it further.

Jónas asked:

What happens when students choose their own composition of assessment? Some feel great in exams and have their good moments there as they have been able to concentrate and prepare for some days or a day and they can perform well. What if students have their worse moments when working on their assignments in other way? What if we have different enough students to justify different assessment for them? (Meeting, 7. 12. 2010)

Jónas developed the idea of alpha - beta - gamma ($\alpha\beta\gamma$) assessment some weeks later and carried it out for the first time that same semester, i.e. in the spring 2009. This class was in the economic study line of the social science department. The next school-year, Jónas carried it out again in the same course with a new class but now from the beginning of the autumn semester and he concluded that the results of the exams were very good in both instances and all but one of the students choose the best composition for themselves. One student who choose gamma should have chosen beta for his best outcome. Jonas showed the outcome in a table:

Type of grade	Average	Standard deviation	Highest grade	Lowest grade	Median
Own choice of α , β or γ	7.1	1,1	8.6	4.8	7.4
Best possible choice	7.1	1,1	8.7	4.8	7.4
Worst possible choice	6.8	1,2	8.5	4.1	7.2

(Ásgeirsson, 2011, p. 3)

Table 11-8 Statistical information about the outcome of alpha - beta - gamma assessment system.

The table shows that there is very little difference between the choices made by the students and the best possible choices they could have made. However it also shows that the students could have made much worse choices and by that the average grade would have been 6.8 instead of 7.1 and the lowest grade would have become 4.1 instead of 4.8.

In the school year 2010 to 2011 Jonas also tried alpha - beta - gamma ($\alpha\beta\gamma$) assessment with another class in their third year of studies but in another department, the natural science department and made a special expanded version for a class in their fourth and final year of studies in the economic study line i.e. a class that had tried the alpha - beta - gamma ($\alpha\beta\gamma$) assessment system the year before. There he connected alpha - beta - gamma ($\alpha\beta\gamma$) assessment only to the semester grade as in the final year the final exam weighs 50% and the semester grade 50% in all subjects.

The purpose of alpha - beta - gamma ($\alpha\beta\gamma$) assessment is to increase student's responsibility for their learning, to increase active learning in the classroom and lessen student's exam anxiety. Before each student decides on the structure of the assessment she/he needs to consider and discuss with the teacher their attendance grade. Have I handed in all assignments and how am I doing? How is my outcome in exams (Ásgeirsson, 2010)?

Jónas said about his experience of the alpha - beta - gamma ($\alpha\beta\gamma$) assessment:

This was great. ... The anxiety had disappeared from the group with the effects that the group did rather well. We worked similarly in the spring semester. ... The aim is to influence how people work

during the semester and increase by that active learning during the classes and the other aim is to lessen the exam anxiety (Meeting, 7. 12. 2010).

The alpha - beta - gamma ($\alpha\beta\gamma$) assessment system can be introduced to the students in the beginning, middle or end of the semester. It depends on the main aim of the alpha - beta - gamma ($\alpha\beta\gamma$) assessment when it is best to introduce it to the students and let them decide on the weighting of components in their final grade in the course. If the aim is to increase active learning in lessons during semester time then it is best to introduce the system in the beginning of a semester.

Jónas explains:

The teacher needs to find a balance in the choice. Sometimes it is important to influence the behaviour of students and then the choice needs to be made as early as possible [during the semester] (Ásgeirsson, 2011, p. 14).

Jónas has discussed the system with the students and concluded that the students were satisfied with it and he points out that: “Students who have experienced the system ask for it again” (Ásgeirsson, 2011, p. 14).

Jónas maintains that students are satisfied both because the alpha - beta - gamma ($\alpha\beta\gamma$) assessment values their work in class over semester time and decreases exam anxiety. It might also increase the student’s feeling of power and their own responsibility over the assessment and thereby their learning. Jónas points out how important it is for the students to feel secure when they take the exam. Jónas recollected what students said about the influence of the alpha - beta - gamma ($\alpha\beta\gamma$) assessment system on their exam anxiety and draws the conclusion that it has had the effect of enhancing students’ performance on the test.

Jónas recollects:

This is great. When we were on our way to take the exam we knew that we had passed, didn’t need longer extended exam time,

we just sat there totally relaxed. We knew we had already passed the course, didn't need to struggle with the exam. The anxiety element had absolutely disappeared from the group so the group did rather well (Meeting, 7. 12. 2010).

The students' active involvement in a dialogue on assessment and feeling their voice being heard was important.

Jónas argued:

Most important was that the conversations about assessment and the students' perception of themselves as having something to say about the assessment, was encouraging for the group (Ásgeirsson, 2011, p. 5).

However Jónas also stressed the importance of keeping the final exam in the program. During the semester the students are increasingly working together in pairs and groups on their assignments in contrast with the individual final exam and Jónas feels that the final exam enables him to evaluate the student's individual ability.

Jónas explains:

The conclusion is in general that the student choice is positive for the discussion on the assessment; it creates good atmosphere and a right mood for the final exam. The final exam is nevertheless necessary to show the individual difference. I wouldn't like to trade that out. But the exam anxiety is not present to the same extent as before (Ásgeirsson, 2011, p. 7).

Jónas has emphasised that the alpha - beta - gamma ($\alpha\beta\gamma$) is an assessment system that should not become compulsory for all teachers to implement. It should be a teacher's choice but not a requirement. Also, it should be seen as an instrument to increase the student's responsibility for their learning assessment, used through conversations with students and consultation with students about the composition of their assessment. It means that the teacher Jónas has given some of his authority or power over to the students and thereby increased students'

responsibility of their learning. This can also be interpreted as a first sign of changes in the division of labour between the teacher and the students.

Jónas concludes:

The advantages for the teacher are that exam anxiety is minimised, questions related to how much each assignment weigh in the grade disappear and the students experience the teacher as a supporter in creating a good atmosphere around assessment. The answers from the teacher are not: this is so because the school decides that; other teachers in the subject decided the assessment; the tradition determines it to be like that. The power is not in the outer surroundings of the school but is transferred to the student and that is very important. The students become in an important sense creators of their own fortune (Ásgeirsson, 2011, p. 13).

The alpha - beta - gamma ($\alpha\beta\gamma$) assessment is a tool that may enable teachers to come up with more democratic forms of assessment. The alpha - beta - gamma ($\alpha\beta\gamma$) assessment may also enhance teachers and students dialogue about assessment and also increase student's sense of responsibility for their learning. Each student needs to reflect on what kind of a student or a learner he or she is and what kind of weighting of components in the final grade of the course is best suited for him or her.

This project of the alpha - beta - gamma ($\alpha\beta\gamma$) assessment created a new tension between the subject, the teacher and the rules as the rule is to have the same weighting of components in the final grade for all students in the same course in Sjárvarsíðuskólinn and it is decided by the teacher and the corresponding subject department at the beginning of semester and stated in the semester plan. That is also the general rule in the curriculum for secondary schools in Iceland.

At a meeting when the transcript of the presentation of Jónas action research project was handed out and discussed by the group it became clear that Jónas was aware of this tension.

Jónas commented:

The tensions appear there because we need to discover which rule we start to break all of a sudden, the rules that we obey without thinking about them (Meeting 3. 2. 2011).

This is both a secondary tension between the elements of subject and rules within the activity system experienced at the fourth step in the expansive learning cycle, and also a tertiary tension between the new way of the alpha - beta - gamma ($\alpha\beta\gamma$) assessment system and the traditional way of deciding one rule of weighting of components in the final grade of a course, experienced at the fifth step in the expansive learning cycle, see Figure 11-5 . The new model of the alpha - beta - gamma ($\alpha\beta\gamma$) assessment began to spread out after Jónas' presentation in the Change Room in December 2010 and a teacher meeting in 2011, both within the mathematical department and also in other subject departments within Sjávarsíðuskólinn.

Jónas was also in 2010 introducing group work with peer assessment that lasted for two weeks. It was a student group assignment on mathematical integration, with presentation in front of the class. All the students assessed the performance of each groups, both outcome and presentation and that weighted 80% and the teacher's assessment weighted 20%. The students should give a grade from 1 to 5 where 1 was perfect and 5 very poor and they needed to provide arguments for their grade. This was done in order to get the students to think outside the ordinary grade box (Ásgeirsson, 2011).

Another students' assignment Jónas introduced this year involved individual students in explaining mathematical problems for the class on the blackboard or "peer tutoring". This was not a compulsory assignment but students could increase their grade by a maximum of 0.5 for participating four times in the project. In total of 13 or approximately half of the class participated in a total of 24 presentations and two students gave 4 presentations (Ásgeirsson, 2011).

Jónas described the aims of this assignment in the following way in his report:

The aim was to get students to explain for each other i.e some kind of “peer tutoring”. Also to show the students who are experiencing difficulties how other students can solve problems, both easy and complex. Another aim was to strengthen the students confidence in that they can also solve the problems, no need for the teacher’s magic to solve the problems (Ásgeirsson, 2011, p. 10).

Both these assignments increase students’ individual active involvement in the learning and assessment process and involve both individual and group learning activities.

In Figure 11-5, Jónas action research project is visualised in the activity system of the classroom where both the tensions are shown in oval shaped boxes and the tools used when trying to solve these tensions through changes in classroom practice and factors influencing that process are shown in rectangle boxes.

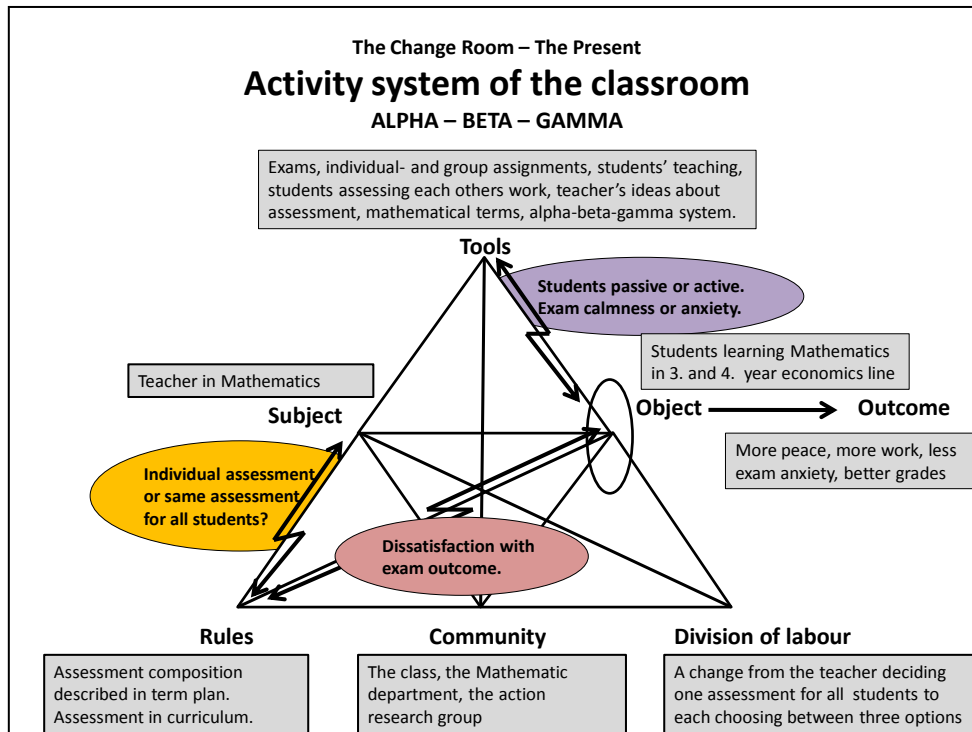


Figure 11-5 Action research in the activity system of the classroom. Cooperation with students on assessment, alpha - beta - gamma ($\alpha\beta\gamma$)

In Figure 11-6 it is described how Jónas went through the expansive learning cycle with his action research project, the alpha - beta - gamma ($\alpha\beta\gamma$) assessment system.

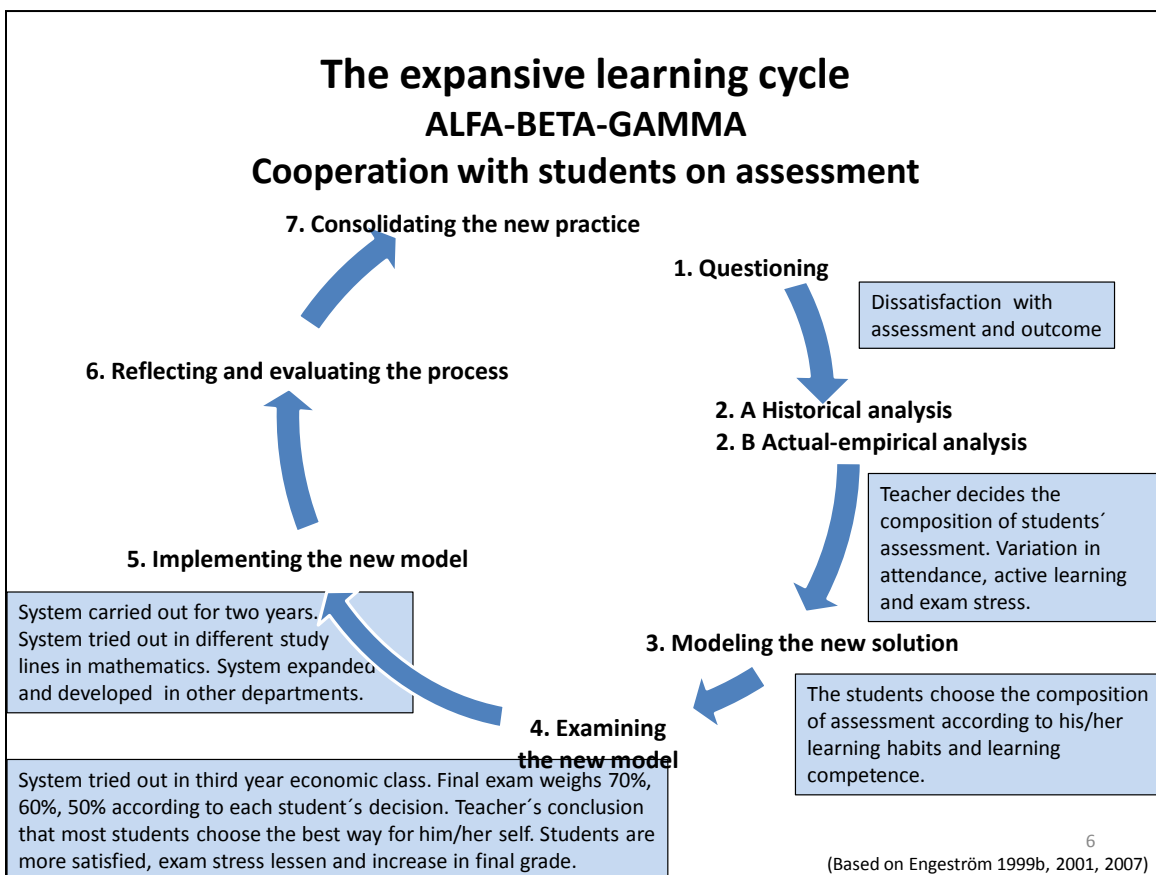


Figure 11-6 The expansive learning cycle. Cooperation with students on assessment, alpha - beta - gamma ($\alpha\beta\gamma$).

1. **Questioning** Students' and teacher's dissatisfaction with assessment and outcome, especially the final exam weighing 70% of final grade.

2. **A Historical analysis** Jónas participated in the pair interview in the Change Room on 7th December 2009, about the changes from the past to the present in Sjávarsíðuskólinn. **B Actual empirical analysis** Jónas concluded that the tradition is that the teacher alone decides the structure of students' assessment. Students' exam outcome varies, some students experience exam anxiety. There is great variation in students' attendance and active learning in class.

3. Modelling the new solution Consultation with students on composition of assessment but the students had different opinions. A question put forward by a student: "But can't we have it different?" The aim is that students choose the structure of the assessment according to his/her learning habits and learning competence.

4. Examining the new model

The alpha - beta - gamma ($\alpha\beta\gamma$) assessment system was tried out in the third year economic class. Final exam weighs 70%, 60%, 50% according to each student's decision. Students fill out a special form. The alpha - beta - gamma ($\alpha\beta\gamma$) assessment system carried out for two semesters. Teacher's conclusion is that most students choose the best way for him/her self. Students are more satisfied, exam stress lessen and increase in final grade. System expanded and developed for other study lines and other years of study.

5. Implementing the new model

The alpha - beta - gamma ($\alpha\beta\gamma$) assessment system was introduced to the mathematical department and to the whole staff group at a teacher meeting. The system was tried out in different study lines, for example in the first year natural science line. The system has also been tried out in other departments, for example Physics and Economics and it inspired a teacher in Icelandic to let students decide how much different assignments should weight in their final grade as described in section 11.5.1 about Mist's action research project.

6. Reflecting and evaluating the process

Jónas had not reached this stage in the expansive learning cycle.

7. Consolidating the practice

Jónas had not reached these final two stages of the expansive learning cycle at the end of the Change Room and it remains to be figured out if some form of the alpha - beta - gamma ($\alpha\beta\gamma$) assessment system will be used at a system level in the school and put in the school curriculum as a legitimate possibility to have a

student's individual structure of assessment. It is clear that alpha - beta - gamma ($\alpha\beta\gamma$) has a real potential to become a system change and in section 15.2 the development of the alpha - beta - gamma ($\alpha\beta\gamma$) assessment system after the Change Room is briefly described.

In the next and final chapter on the findings the focus will be on the action research group as an activity system in the Change Room, the modalities of the learning of participants and development of their agency to change practice and cross curriculum agency. But first I will describe how the participants in the action research group evaluated their participation in the Change Room and their view of the influence of participation in action research on their professional development.

12. THE CHANGE ROOM – THE ACTION RESEARCH GROUP

12.1 Participants' evaluation of the Change Room

At the last meeting in the Change Room in May 2011 participants evaluated their experience in the Change Room by answering a questionnaire with both open and closed questions; see the questionnaire in Appendix 9. The answers were anonymous. Eleven (of a total of 17) participants answered the questionnaire. The answers to the first six closed questions evolved around the Change Room and the last five closed questions the action research projects. The open questions also focused both on the Change Room as such and on action research. I will here describe the participants' evaluation in general but I will also link their evaluation at appropriate places further on in this chapter, in the discussion of the elements of the action research group as an activity system, the tensions experienced in the Change Room, the participants' modalities of learning and their agency to change their practice.

Table 12-1 shows the participants' answers to the closed questions in the survey. They show a very positive attitude towards the Change Room in general as nine were very satisfied and two satisfied. They were especially positive towards the group meetings, the focus on tensions in classroom practice and the usefulness of the minutes of the meetings. They were least positive regarding the influence of the Change Room on their action research projects and the usefulness of the analysis of the action research projects in the activity system of the classroom. This is in line with experience of former Change Laboratories in Finland where participants find it difficult to understand activity theory and activity systems (Virkkunen as cited in Roth & Lee, 2007; Virkkunen & Newnham, 2013).

N=11		Very		Neutral		Not at all	
		5	4	3	2	1	
1.	How satisfied are you with your own participation in the Change-Room?	9	2				
2.	How valuable did you find the written minutes of meetings?	8	3				
3.	How useful did you find the interviews about the past in the Change Room?	5	2	4			
4.	How useful did you find your participation in the group meetings?	9	2				
5.	How useful did you find it that the Change Room focused on conflict in the classroom?	8	3				
6.	How useful did you find the analysis of action research projects in the activity system?	3	6	2			
7.	How encouraging was your participation in the Change Room for your work on the action research project?	2	6	3			
8.	How influential do you think the work of the action research group has been on school-practice in Sund college?	4	6	1			
9.	How important do you think action research has been for your professional development?	10	1				
10.	How influential has the action research been in changing your practice?	8	2	1			
11.	How satisfied are you with the influence of your action research project in increasing students' outcome?	3	7	1			

(Meeting, 10. 5. 2011)

Table 12-1 Participants' evaluation of the Change Room in May 2011.

The anonymous answers to the open questions about the positive and negative outcomes or obstacles in the Change Room show participants' different views towards the Change Room but positive remarks clearly outnumbered the doubtful ones.

Positive remarks concerning the Change Room included:

More theoretical discussions about research of individuals. A new perspective on the projects, tension is revealed.

You learn a lot from others action research projects and it is good to see it within the activity system, it shows you the basic parts of the work that we are all dealing with in our teaching.

I understand better tensions in the teacher's job and how outside factors influence the school.

Yes, I think it is useful to see research in a different light i.e. in the activity system.

I see my research in a larger context.

Good to get analysis on the teachers' action research - a new aspect on the practice that one doesn't necessarily see when one is teaching.

(Meeting, 10. 5. 2011, Participants evaluation of the Change Room).

Obstacles identified in the Change Room:

It puts more formal atmosphere on the group that should not become dominant.

We might process the findings more.

(Meeting, 10. 5. 2011, Participants evaluation of the Change Room).

When asked about the connection between the Change Room and the action research they presented contrasting views:

They connect well together. The Change Room is a good tool for analysis.

I am not sure that there is a connection.

(Meeting, 10. 5. 2011, Participants evaluation of the Change Room).

When asked what they wanted to keep from the Change Room, three participants said they wanted to continue to see their action research projects visualised in the activity system of the classroom, two participants mentioned that they wanted to

keep everything, and three mentioned that they wanted to continue doing action research.

Some participants clearly appreciated the input of the activity theory in the Change Room, which helped them to see their work in a larger perspective and to analyse their situation. That was confirmed at the follow up meeting in September 2011 as some of the participants and the outside consultant pointed out positive effects of visualising the action research projects in the activity system of the classroom.

Hafþór (Outside consultant) concluded:

I just think that I have seen in your data, as I have read them, that people are seeing themselves in a larger context. This helps people to see themselves in a larger perspective, this Change Room and the activity theory. These figures we have been looking at, the rules, division of labour and all that. This opens up. I think people are saying that (Meeting, 1. 9. 2011. A follow up meeting).

Some of the participants also saw it as a tool for analysing. Here is one example.

What seems to me perhaps is that the Change Room has been welcomed at the table with us in our discussions. And it becomes for us in some way a tool for analysing. When you start to mirror yourself in this analysing tool it creates an extra dimension in our conversations and our own experience of us. ... (Finnur (30+ English 2) Meeting, 1. 9. 2011. A follow up meeting).

The participants often mentioned shortage of time as the main obstacle in the Change Room and I believe this lack of time caused tension in the Change Room, this will be discussed further in section 12.3 in terms of manifestations of contradictions within the activity system of the action research group.

Participants take a very clear stance regarding the influence of action research on their professional development as ten participants indicated that it is very important and one that it is important. The participants also see their action research as very

influential in changing their practice - eight said it was very influential, two influential and one was neutral, see Figure 12-1. The participants' answers to the open question about what changes they had made in their practice through action research, supports the findings presented in section 11.4 concerning the main changes in classroom practice that teachers made in the Change Room. Eight participants mention changes they have made regarding their connections to the students, six mention increased consultation with students about the teaching and four mention increased emphasis on active learning.

Examples of their anonymous answers include:

I have moved from the blackboard towards the students, increased assignments, continuous assessment, and out of classroom teaching.

More emphasis on students' responsibility, more collaborative assignments, more consultation with students.

More conscious and enlightened contacts with students. Now I have a survey at the beginning and at the end of each course.

I introduced cooperative learning methods and increased students' participation in their learning and that resulted in enhanced students' interests and more positive attitudes towards the subject.

(Meeting, 10. 5. 2011, Participants evaluation of the Change Room).

The same emphasis appears in the teachers' answers to open questions on what they have learned through the process of action research about their practice and about their students.

Here are four examples of their anonymous answers:

That I get better results with constant self-reflection. Changes in teaching is a lot of hard work but a very valuable work.

That they [the students] are ready to jump and adjust to new methods.

It matters to have a good relationship with students and let them feel that they have something to say about their learning.

By giving responsibility to students in the classroom, it is possible to get them to participate, even the less able, especially if the assignments demand creative work.

(Meeting, 10. 5. 2011, Participants evaluation of the Change Room).

The participants describe how they learn through making changes in classroom practice and the importance of knowing, valuing and taking notice of their students' opinions. However the participants are not as confident about their own satisfaction with the influence of their action research project on students' outcome in terms of their grades with three participants very satisfied, seven satisfied and one neutral in this regard. The reason might be that the participants are unsure about this influence as very few discuss this in their presentations on their action research projects or in their reports.

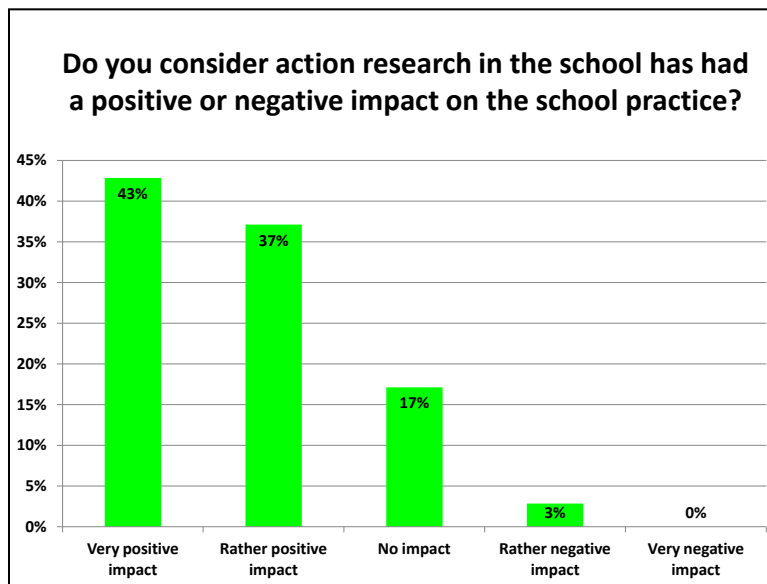
When interviewed about the past, in the Change Room, the participants often mentioned the positive effects of action research on them as professionals.

Last year, because I was not studying and had not finished my teacher education, I felt that action research helped me a lot. It helped me to get an insight into some lessons with other teachers really without actually being present in the lessons. So, I thought it was really great and one could discuss all kinds of problems that came up (Elísabet (30+ Geology 1). Pair interview about the Past 9. 12. 2009).

I also started doing action research that was very good for me. I started looking differently at things (Finnur (30+ English 2). Pair interview about the Past 9. 12. 2009).

If I talk about positive change then action research has changed my view a great deal and all the discussions about school development gives you a lot (Íris (50+ Danish 19). Pair interview about the Past 9. 12. 2009).

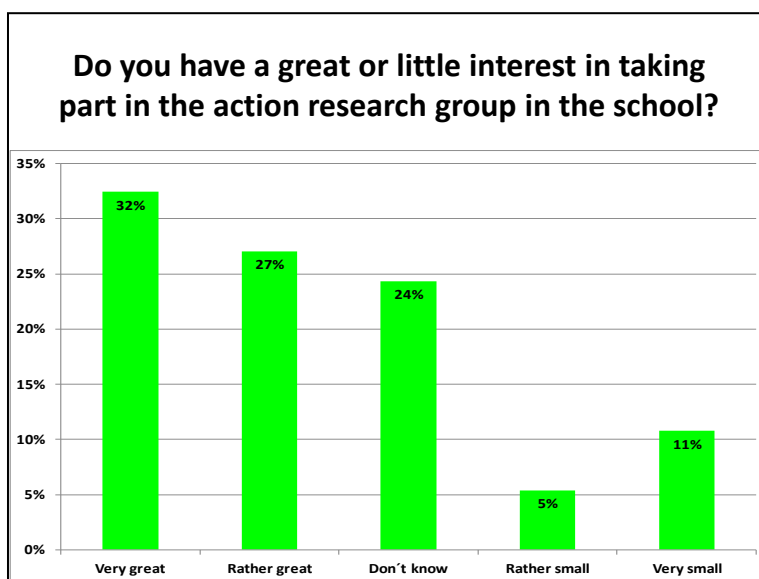
Regarding how influential participants in the Change Room considered the work of the action research group had been on school practice in Sjárarsíðuskólinn four participants considered it “very influential”, six “influential” and one participant was neutral, see Table 12-1. In a staff survey in May 2011, a similar question was put forward. A total of 39 or 60% of the staff group completed the staff survey that was carried out on the school’s intra net on the 25th of May 2011. Of the staff group, 43% considered that action research had had a very positive impact on the school-practice, 37% rather positive impact, 17% no impact and 3% rather negative impact, see Figure 12-1.



(Thorgeirsdóttir, 2011e)

Figure 12-1 Attitude of staff towards the impact of action research on school practice in Sjárarsíðuskólinn.

In the same staff survey in May 2011 there was a question about the staffs' interest in taking part in the action research group. 59% said they had great interest, 16% said little interest and 24% said they did not know about their interest in taking part in the action research group, see Figure 12-2. Nine of the 11 participants in the Change Room that took part in the evaluation in May 2011 said they would continue in the action research group the next school year. Two participants said they would take a break. The school has put emphasis on voluntary participation in the action research group in Sjárvarsíðuskólinn as we consider that having a great influence on the empowering effects of action research. It is both important because of the ownership of their research and because teachers' collaboration must not be forced in the learning process as was discussed in section 4.4 (Hargreaves, 1994; McNiff, 2010). It is also considered important in traditional Change Laboratories to have voluntary participation as the learning process needs the participants' motivation and adaptability to various learning actions (Virkkunen & Newnham, 2013). However both the group leader and school leaders have encouraged teachers to join the action research group, especially new teachers in the school.



(Thorgeirsdóttir, 2011e)

Figure 12-2 Attitude of staff towards taking part in the action research group in Sjárvarsíðuskólinn.

Vigdís Þyrí Ásmundsdóttir (2012) studied the action research group in Sjárvarsíðuskólinn for her MEd degree at the University of Iceland. She approached us and asked for permission to evaluate the work of the action research group and was granted that permission by the head teacher. Ásmundsdóttir's status towards the group is independent, as to best of my knowledge she had no prior connections with the participants in the group which is rather remarkable considering how small our community is. Ásmundsdóttir's aim was to evaluate action research as a method for teachers' continuing education:

The purpose of this research is to shed light onto whether teachers believe that action research is a viable option in their continuing education and in what way the action research affects their professional development, school reforms and how the students are educated (Ásmundsdóttir, 2012, p. 6).

The evaluation of the action research is based on a model from Guskey (2000) on five levels and at each level a certain aspect of the teachers' continuing education is assessed. At the first level the participants' reactions are measured, at the second the teachers learning, at the third the support from the organisation, at the fourth the participants use of their knowledge and skills and at the fifth and last level the students' learning outcomes are assessed (Ásmundsdóttir, 2012; Guskey, 2000).

At each level various questions are put forward under four main categories i.e. "What questions are addressed?" "How will information be gathered?" "What is measured or addressed?" "How will information be used?" (Guskey, 2000, p. 79). Guskey's aim was to develop a formal, systematic and effective evaluation model to identify and measure the value of professional development programs and activities. Each of the evaluation level is important but the levels are hierarchical with the final level evaluating the influence on students' learning.

The levels in this model for evaluating professional development are hierarchically arranged from simple to more complex. With each succeeding level, the process of gathering evaluation

information is likely to require increased time and resources. More importantly, each higher level build on the ones that come before. In other words, success at one level is necessary for success at the levels that follow (Guskey, 2000, p. 78).

Guskey argues that teachers' professional development has mainly been evaluated at level one i.e. participants satisfaction but has ignored how the learning has affected the teachers' practice (Guskey, 2000). The final level, evaluating the influence on students' learning is in fact evaluation of the purpose of the professional development. Guskey argues that when you are planning provision of professional development you need to start at the final level, setting goals regarding students' learning and then work your way backwards down the evaluation levels (Guskey, 2000).

Ásmundsdóttir (2012) used Guskey's evaluation model when she evaluated the work of the action research group in Sjárvarsíðuskólinn. She gathered qualitative data mainly in the spring of 2010 but her interview with me was in the spring of 2012. She used a focus group with five participants from the action research group, interviewed three teachers who were participants in the Change Room and two school leaders i.e. the head teacher and the deputy head teacher, myself. She also used existing public data i.e. reports on the work of the action research group from 2006, 2008 and 2011 (Thorgeirsdóttir, 2006, 2008; Thorgeirsdóttir, 2011b), articles from 2008 and 2010 (H. Guðjónsson, 2008; Thorgeirsdóttir, 2010b) and the school's self-evaluation report from 2011 (Thorgeirsdóttir, 2011d).

Ásmundsdóttir's main conclusion was that the teachers believe that action research has had a positive influence on their professional development. In the interviews, the teachers expressed their satisfaction with being able to do action research on their work and the focus group stressed the group meetings as a very positive experience and perhaps the most important part of the action research process. The participants considered the structure both encouraging and supporting and the outside consultant having the impact of deepening their theoretical conversations of the teaching practice and enhancing critical thinking. The participants saw action research as a learning process that enhanced their

personal competence and increased their pedagogical knowledge. They considered the school's support good and appropriate. The teachers agreed that they had changed their teaching methods through action research in a purposeful way but also pointed out that changes take a long time and hard work. The teachers agreed that the new teaching methods and increased consultation and collaboration with students had increased students' active learning and their responsibility for their learning and that they have led to improvements in the school (Ásmundsdóttir, 2012).

These conclusions of Ásmundsdóttir's evaluation of the action research in Sjárvarsíðuskólinn are in consonance with the participants' evaluation of the Change Room described above and the findings of the Change Room described in sections 11.2 and 11.4 on participants individual changes in classroom practice.

Next I will describe the action research group as an activity system in the Change Room with the conceptual framework of the activity theory with a special focus on the role of the outside consultant.

12.2 The action research group as an activity system in the Change Room

12.2.1 The Subject, the object and the tools

The activity system of the action research group in the Change Room from the perspective of the subject, i.e. the participants, is shown in Figure 12-3. The group included 18 teachers, a student counsellor and two school-leaders. Women were in majority (15 women and 6 men). The participants taught 10 different school subjects with teaching experience ranging from 0 to 24 years. The average age of participants was fifty years, with an age range from 26 to 65 years of age. (For further details see section 9.1).

The object is the professional development of the participant through their participation in action research projects. The action research topics were various but most of them focused on the students and their active learning in the classroom. (For further overview of the action research topics and description of the individual action research see chapter 11 and Appendix 12).

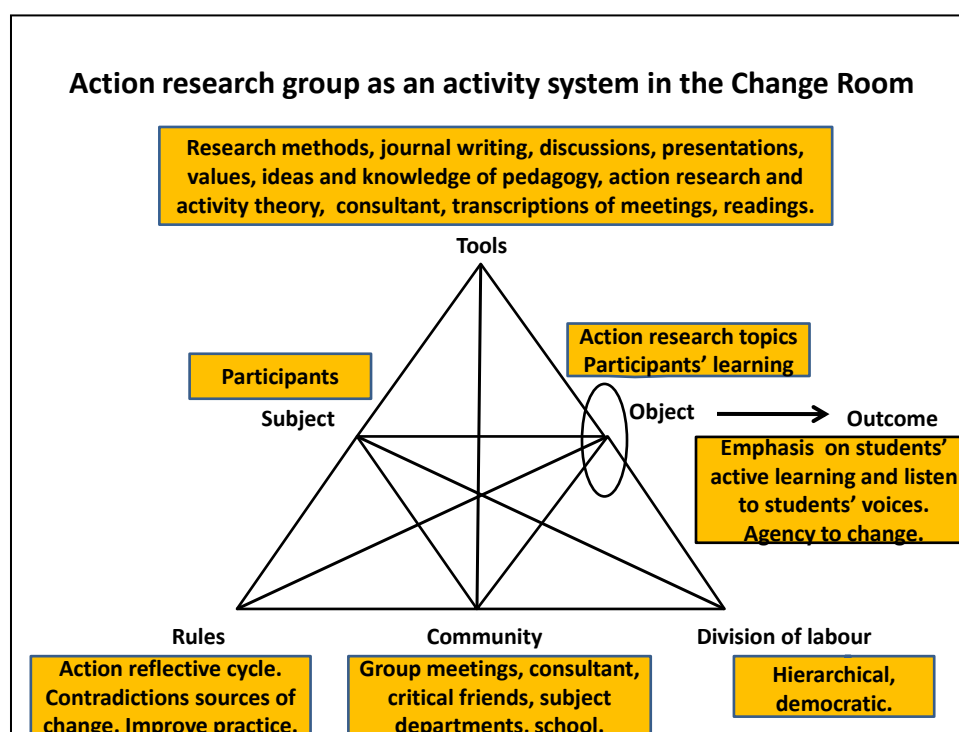
The tools or mediating artefacts used by the group in their action research process were journal writing and various other research methods, the participants' ideas and knowledge about pedagogy, activity theory, the group meetings and the outside consultant. All the participants were engaged in journal writing of some kind, both for organisational and reflective purposes. Few participants described their use of journals or used direct quotes in their journals in their presentations and reports on their action research projects so information is lacking on exactly how they used them. McNiff (2010) puts great emphasis on journal writing; to keep records of actions, reflections about actions, both positive and negative, and the learning arising from it. Most of the participants also used questionnaires to get information about students' attitudes and opinions either with open or closed questions. There were also examples of the use of interviews, photographs, audio and video recordings of classroom practice, students' material, public records and statistical information. (For an overview see 11.2.).

Hafþór, the outside consultant for the group has emphasised the importance for teachers of collecting information about their classroom practice to develop their work through action research:

The key point is always data-recording and data-gathering, that one records what happens and gathers data on the object of the research (H. Guðjónsson, 2011b).

The participants presented their data about their work and their interpretation of it at the group meetings. There they got important feedback both from other group members and the outside consultant. The participants' evaluation of the Change Room and the research of Ásmundsdóttir (2012) on the action research group, both described in 12.1., showed that the group meetings were important for and highly valued by the participants. The participants found the meetings and the minutes of the meetings useful for example for identifying the positive and negative aspects of their own projects, getting new ideas, insight into other school subjects and increasing their theoretical understanding. They also found the facilitating role of the outside consultant very important (Meeting, 10. 5. 2011. Participants' evaluation of the Change Room). For the participants, the group meetings and the

outside consultant operated as tools in the action research process but both were also part of the social context i.e. the community of the action research group. The group meetings and the outside consultant are therefore put in two different elements of the activity system of the action research group in the Change Room, see Figure 12-3 below. Because of the scope and influence of the role of the outside consultant as a tool and as part of the community it will now be described in some detail before I describe the community, rules and division of labour of the action research group in general.



(Adapted from Engeström, 2001)

Figure 12-3 The activity system of the action research group in the Change Room.

12.2.2 The outside consultant

The role of the outside consultant in the action research group in Sjárvarsíðuskólinn was firstly to provide professional guidance; secondly to give advice about the program at the monthly meetings, thirdly to be present and actively involved in discussions at the meetings and fourthly to provide individual help with presentations that group members gave outside the school at conferences in Iceland or abroad. Participation in the discussions at the meetings involved in

active listening, praise, support, identifying links to theory and pedagogy, enhancing interest in action research, questioning, challenging, and suggesting ways forward.

Praise and support

When participants presented their action research projects, the outside consultant, always made a positive comment. Sometimes he praised the idea, sometimes the tools that were used, sometimes the outcome and sometimes the project as such.

When Andrea presented her action research project on Mathematics on Facebook, Hafþór praised the project:

... You are getting results, it is for sure, and you are showing us that. At least with some of the students you get results. And I think this is a really great action research. I just have to say that, very clear and direct (Meeting, 10. 5. 2011).

When Elísabet presented her action research project on students' attitudes to Geology, Hafþór gave praise and support by comments of confirmation:

This is enjoyable and shows that when they [the students] are thinking about Geology, they think about you. ... As if the discussions [with the students] glue you together. It becomes more of a community (Meeting, 31. 3. 2011).

Links projects to theory and pedagogy

Very often the praise and support was given and then followed by linking the project to pedagogical discussions or some questions that were raised as will be clear from the next examples.

Hafþór, gave praise and support to Helena (30+ Icelandic 1) at a meeting where she presented her action research project on students' as active learners. Her project was twofold, one involving creating a students' databank on the school's intra net and the other was on students' discussions in lessons in "the Court of sagas". Hafþór praised Helena's project for the collaboration with the students and

he linked it to PEEL, the Project for Enhancing Effective Learning which was founded in 1985 in Australia, by teachers and academics in order to develop and research methods to enhance students' learning (PEEL, 2009).

Hafþór said:

I think it is really great to listen to you. When you turn it over to them [the students] then the lessons begin to be influenced by them. This reminds me of PEEL because its aim is to find out how we can awaken them from the sleepiness they often fall into. Get them to work with us to shape the learning environment. I think you are doing that and the outcome is exciting. Think you have a convincing data that tell us a story (Meeting, 18. 11. 2010).

Hafþór connected Jónas' action research project, alpha - beta - gamma ($\alpha\beta\gamma$) on individual composition of assessment in Mathematics to a general discussion about the pedagogy of individualised learning that was taken place in the University of Iceland. He provided confirmation that the research was relevant and at the same time he gives praise to the presenter and puts forward a question for discussion.

Hafþór said:

I have to say that this is one of the more interesting thing I have heard for a long time regarding individualised teaching. People have been asking me about how to implement it, the assessment lies heavily on schools and everybody. We all know about the exam anxiety. You ask: What happens when students are able to choose their own assessment? But I thought of asking in relation to that: Is different assessment justifiable or is it perhaps very desirable and very fair? (Meeting, 7. 12. 2010).

Hafþór also gave encouragement by connecting the action research projects that were presented to the overall aim of the group of increasing the students' responsibility for their learning and by that he also reassured us that we were on

the right track and united in working towards our collective aim. Here is an example how Hafþór connected alpha - beta - gamma ($\alpha\beta\gamma$) to students responsibility.

I like to consider this in light of the emphasis we in the action research group and here in the school have been putting on increasing the students' responsibility, get them to think about their learning, take it into their own hands. This assessment comes into the picture. They have to take a stance. How can I best articulate my knowledge? Yes, I often have exam anxiety; I should therefore rather choose assignments. They are starting to think about their learning, reflect on it. That is really worth something (Meeting, 7. 12. 2010).

Hafþór connected Rakel's action research project on expression in Icelandic to pedagogical literature and did it in a general manner so it became easier to see the transferability of the results to other subjects. He also gave praise to the presenter.

Hafþór said:

“Thinking is literacy and literacy is thinking” (Roberts & Billings, 2008). ... You should recollect its content after listening to Rakel today. What they are pointing out in this article is the close connection that exists between the language and thinking. The language is the foundation of all learning and it is necessary to give students a chance to use the language in various ways, talk, write, listen, talk with each other. It is the key to all learning. It is great what you said about connecting expression with the learning material. ... This is remarkable. Thank you (Meeting, 7. 12. 2010).

Later at that same meeting he connected the discussion again to the same article on literacy and thinking and then he also connected that with the discussion on the tension between coverage and deep learning that had taken place earlier at the meeting. There Hafþór also challenged the group and encouraged teachers to provide students with more opportunities for deep learning.

Hafþór explained:

You must read “Thinking is literacy” and especially at the end about how children learn to approach a poem by Emily Dickinson. Really amazingly clever approach, unbelievable deep learning that in fact took a long time. But it was unbelievably deep and good learning that I don’t doubt will live with the students, perhaps forever. But we are always stuck in the coverage of material and there will never be a living knowledge with the students (Meeting 7. 12. 2010).

Questioning and challenging

Hafþór, asked participants, who were introducing or presenting their action research projects at the meetings, various questions. For example he asked for more information, for explanations, for interpretations, for attitudes and feelings, for descriptions of participants’ next steps. Often the questions were appreciative and supportive but sometimes they also involved a challenge, expectations were raised or a special effort was expected of the participants.

At one of the meetings in the Change Room, Ingunn (50+ School leader 24) presented her action research project on students’ actual attendance.

Hafþór gave praise and asked:

I have one question for you. This is a very interesting report and it is very clear and informative. One question because we mentioned the word “virtue” before at the meeting. We can ask: Is attendance a virtue? (Meeting, 24. 2. 2011).

At a meeting, when Finnur (30+ English 2) introduced his action research project on English grammar Hafþór asked:

How are you going to turn this into an action research project?
(Meeting, 18. 11. 2010).

At a meeting, when Anna (20+ Biology 1) was presenting her action research project on various teaching methods in Biology and students' attitudes towards the methods Hafþór commented:

What ideas do they [the students] have about learning? They think that they are actually learning when they are writing down notes but when they are talking together they think are just talking together, not learning ... (Meeting, 10. 5. 2010).

Here Hafþór took the student's point of view and was challenging the participants in the action research group to consider students' discussions as an important learning method and the necessity to explain that to the students so they could learn to appreciate it better as a learning method.

At the same meeting, Hafþór also praised Anna for using various teaching methods and positive feedback from her students but ended by asking her about the next steps in her classroom practice in light of the findings of her project:

Here you present a great variety of methods you are using to break up the teaching, to let them work with the text ... I also see that you are getting a positive reaction from them. What will you take with you into the next school-year? What have you learned from this? (Meeting, 10. 5. 2010).

At a meeting where Bjarki (60+ Danish 23) presented the cross curriculum action research project developed with Sandra (40+ History 20) on an optional course on the history of Christian IV king of Denmark and Iceland in the seventeenth century. The optional course evolved around students' project work and a study visit to Denmark. There was a discussion about the students' project work and that the teachers experienced a gap between their own reality and the students' reality. Then the outside consultant asked if the students had enough introduction of these kind of working methods i.e. independent project work:

Hafþór: But how did you begin? Did you discuss at length with the students about this form of working?

Bjarki: Rather little and that is also our fault.

Rakel: That is perhaps the weakness in the project?

Hafþór: Because we were discussing the gap [between the cultural world of the teacher and the students]. Perhaps they are a bit confused. They don't know exactly what they are getting into. They are not used to these forms of work. All these new forms (Meeting, 15. 4. 2010).

Both in Hafþór's reaction to Bjarki and Sandra's project and Anna's project described above we can see how the role of the outside consultant helps the participants to see themselves in the data that they have collected. This role is well described as "to serve as a mirror" as Kane and Chimwayange (2013) experience their role as researchers working with teachers in schools.

Later at the meeting where Bjarki presented the action research project on students' project work, Hafþór gave advice to the whole group concerning interpretation of the aim to increase students' assignment related learning in the new school curriculum. It was clear from the discussion that the teachers thought it was unclear what was meant by the aim of students' assignment related learning as some thought it meant project work, others that it meant greater number of small assignments. Some called for a discussion, others called for one definition of assignment related learning.

Hafþór explained:

I would not like you to try to put forward one definition of what this really is [assignment related learning]. This form he [Bjarki] is introducing is very exciting. It is very community focused, notice that. It is very research focused, notice that. It is good and exciting. But I would like to hear about more versions here. When you start thinking about this and connecting it to your subjects and your special problems that you are experiencing then you put forward

your own versions. Let us hear them, what each one of you has to offer (Meeting, 15. 4. 2010).

Here Hafþór took a clear stand against creating one definition of students' assignment related learning and called for individual teacher's interpretation of this aim both from individual and subject related problems of classroom practice. A little later at the meeting he again emphasised this point, encouraged the teachers to have an open mind for different solutions to their problems, to ask the students for their opinion on classroom practice and he also used the opportunity to praise the participants.

Hafþór argued:

I think it is important to begin at the right place, that we consider, both each one of us and together: What kind of working method do we need to create to solve the problems we are facing in the classroom? ...

I think it is really exciting to listen to you. And I think that you are underestimating the outcome of your work. I would like to encourage you to turn to your students and ask them how they were experiencing this. Yes, perhaps something might come out of it that could even surprise you (Meeting 15. 4. 2010).

Here Hafþór, is clearly giving the participants in the action research group confirmation that we are on the right track and also showing the way forward by emphasis on listening to the students' voices.

At one of the meetings in the Change Room, the whole group was discussing the first findings of the Change Room i.e. that the participants in the group were emphasising students' active learning. Then Hafþór pointed out:

In order to influence the students' learning habits then the key issue is to get the students to consider and think about their own learning habits themselves. What are good learning habits? What are poor learning habits? (Meeting, 6. 10. 2010).

Action research

Hafþór, often directed attention to the object of the action research project in the activity system of the classroom i.e. the students' learning. He points out that it is important to look at teaching and learning from the students' point of view and to listen carefully to their voices when evaluating the outcome of the action research projects and making decisions about how to carry on and plan the next action research cycle. Hafþór, enhances participants' interest in action research by discussing the nature of action research, providing information about what is happening at the University of Iceland and the Society of action research in Iceland both in relation to action research and teachers' professional development in general. By that he is encouraging people to participate in conferences, meetings and methodological courses on action research. He also introduced a new book by Jean McNiff on action research and professional development and encouraged people to attend a conference she organised in York in England.

In a discussion on action research Hafþór encouraged the group to continue their action research, described the influence of it and linked it to the importance of developing a professional teachers' language to enhance teachers' professional development:

Hafþór described the working of the action research group:

I am very excited about that this [the action research group] will keep going, that people will consider, examine and present. There is always something noteworthy in it. ... You get feedback from each other, we strengthen each other and this discussion must continue. And when I speak of action research, then I can say that one of the main purposes of it is clearly to enhance discussions, enhance the dialogue in schools. ... As we get better in thinking and discussing our work the stronger professionals we become in our fields (Meeting, 6. 9. 2010).

Encourage to publish work

Hafþór, encouraged participants to present their work to other teachers at meetings, conferences, in periodicals, as teacher's stories on the Internet and in books. Hafþór put special emphasis on encouraging participants to present their work through written products:

I would like to see an article on your cooperation [Bjarki and Sandra with cross curriculum project work in an optional course combining Danish and History] (Meeting, 4. 2. 2010).

Great action research by you that I would like to see published somewhere [Helena with active student learning in Icelandic] (Meeting, 18. 11. 2010).

Congratulations. I will not stop until you write about this [Jónas with alpha - beta - gamma ($\alpha\beta\gamma$), individual composition of assessment in Mathematics], it is so important (Meeting, 7. 12. 2010).

Could we have an Icelandic version of this in an article in Netla? [Sandra with Historiana in collaboration with European history teachers] (Meeting, 3. 2. 2011).

A book about teachers' action research projects in Sjávarsíðuskólinn. The time is ripe (Meeting, 1. 9. 2011).

Presenting to other teachers and publishing action research projects is something that Jean McNiff has put a great emphasis on in her writings (McNiff, 2010; McNiff & Whitehead, 2009b).

McNiff explains the purpose of publishing research results:

By producing your account of practice you are not only helping other practitioners to see how they can help themselves but also contributing to the public evidence base of practice, and to the public knowledge base of theory (McNiff & Whitehead, 2006, p. 169).

McNiff also stressed the importance of publishing when attending meeting on action research in Sjárvarsíðuskólinn in the spring of 2011 where she articulated the moral responsibility of teachers to present their work to other practitioners. They should use every opportunity for influence because it is not only the teacher's job to implement other peoples theory; "what about your own theory?" (Meeting, 9. 3. 2011).

Other studies

Ásmundsdóttir's (2012) study of the action research group in Sjárvarsíðuskólinn that took place just after the Change Room also revealed the importance of the outside consultant for the group. From the interviews with the teachers she concluded that the teachers were very happy with his guidance and considered it to be very important support for their action research. Ásmundsdóttir presented two quotes about the impact of the outside consultant:

Hafþór has been with us all the years and that is invaluable for us in the group.

Yes, Hafþórs guidance has been very important for us, he is always ready to listen and give advice. ... He has taught us to point to some other ways of doing things rather than to tear down what is being done (Ásmundsdóttir, 2012, p. 54).

A pilot study of the action research group conducted in 2008 - 2009 (Thorgeirsdóttir, 2009) showed that before the Change Room the action research group members valued the role of the outside consultant greatly. They pointed especially towards his role of providing the group with a pedagogical framework and relevant literature and directing the emphasis from teaching to learning. Some wanted to get more guidance from him and more teaching about action research. The role of the outside consultant is different from one action research project to another. In some it is similar as in our action research group but in others the consultant plays a larger part, especially in collaborative action research (Haggarty & Postlethwaite, 2003; Savoie-Zajc & Descamps-Bednarz, 2007).

Conclusion

The role of Hafþór, the outside consultant in the action research group is multi-faceted as has been presented in this chapter.

Postholm and Skrøvset (2013), who are university researchers working with action research groups in Norway, applied to their work a useful distinction that Bateson (1972) put forward between symmetrical and complementary social relations. Symmetrical are positive actions and provide confirmation but complementary are critical actions and provide challenge. Postholm and Skrøvset maintain that the outside consultant needs to provide both types of relations and it is very important for the consultant to find the right balance between the two in order to create a positive influence for learning and trust in the action research group.

Bateson (1972) concludes that in order to have a good balanced relationship it is best to have a mixture of symmetrical and complementary relations and important to have a small amount of complementary actions in a symmetrical relationship:

It is possible that, actually, no healthy equilibrated relationship between groups is either purely symmetrical or purely complementary, but every such relationship contains elements of the other type. It is true that it is easy to classify relationships into one or the other category according to their predominant emphasis, but it is possible that a very small admixture of complementary behaviour in a symmetrical relationship, or a very small admixture of symmetrical behaviour in a complementary relationship, may go a long way toward stabilizing the position (Bateson, 1972, p. 70).

I came to the conclusion that Hafþór, provided both symmetrical and complementary relations at our group's meetings but the symmetrical relations were much more common and influential. I consider this is particularly important for enhancing teachers' agency to change practice.

One of the participant's describes his experience:

One gets criticism and the faults are pointed out but somehow you experience this first and foremost as a group that gives praise... This somehow happens through the personality of Hafþór.... He has always been ready, right from the beginning, no matter how stupid one was, to help and say: Lets develop this a little further (Ásmundsdóttir, 2012, p. 47).

As has been described above, Hafþór's participation in the discussions at the meetings involved praising, supporting, pointing out links to theory and pedagogy, enhancing interest in action research, encouraging to publish, questioning and challenging. His suggestions were not taken as implied criticism but rather to support and lead us forward. By combining these together in his multi-faceted role with overwhelming symmetrical relations he builds up trust within the group that is a prerequisite for open and honest dialogue in the group and it creates an atmosphere of interest and wellbeing at the meetings. Perhaps the most important overall influence the outside consultant has is to be able to show us the way forward or envision positive development ahead (Postholm & Skrøvset, 2013).

12.2.3 The community, rules and division of labour

The community, which in this context is the action research group, provides both professional and affective support to the participants. The group meetings, which were held about once a month were very important for the group as can be seen from the description of the role of the outside consultant above. There were tensions about the time, the frequency, length and timing of the meetings that will be discussed later in this chapter. Overall the evaluation of the Change Room and other studies of this action research group show the importance of the meetings (Ásmundsdóttir, 2012; Thorgeirsdóttir, 2009). The participants learn through their participation in the meetings and their participation empowers them to show agency in their classroom practice. The modalities of participants' learning and development of their agency to change their practice will be discussed later in this chapter. Other action research studies have shown similar influences of action research groups. Savoie-Zajc & Descamps-Bednarz (2007) found that the group supported and validated the reflection process as well as providing pressure on

members to carry out their research. Evans (1997) concluded that it was important that the group enabled the teachers to believe in themselves enough to be willing to try out new ideas.

The main changes in the discourse at the meetings in the Change Room over the two school-years were more organized discussions around certain topics, an increase in presentations of action research projects from 5 in the former year to 10 the second year, an increase in discussions of tensions and conflicts in practice and more focus on the students. There was an increase in references to students' comments, for instance what they said in particular circumstances and their work, for example pictures of their work. There is also an increase in focus on students' learning activities in the classroom. The first three changes may be a direct result of the intervention of the Change Room and the last may reflect the changes made in the classroom practice in the action research projects i.e. a shift in focus from teaching to learning.

Early on the participants in the action research group were encouraged to pair themselves together internally as critical friends to work together between the group meetings. A critical friend is someone that you can talk things over with, asks questions to help you focus and see different perspectives and whose opinion you value. Some of the participants also visited each other's classroom and provided constructive criticism while others taught certain courses together. A critical friends needs to be both supportive and critical and show concern for the outcome of your action research (Ladkin, 2004; McNiff, 2010; McNiff & Whitehead, 2006; Wennergren & Rönnerman, 2006).

The leader of the action research group, Rakel, asked at a meeting at the beginning of the autumn semester 2009 for information about who were critical friends within the group and encouraged the six members who were lacking critical friends to create pairs. At the beginning of the spring semester of 2010 Rakel asked again about information about critical friends and by then all 18 participants had paired themselves together. In the autumn semester of 2010 Rakel again encouraged all participants to pair themselves together as critical friends but no information was gathered about who was with whom. Rakel pointed out how

important it is to have a critical friend to work with between the group meetings and Hafþór, the outside consultant supported that (Meeting, 6. 9. 2010). Although all participants had a critical friend there were very few references made by participants in the Change Room to their critical friends as such either in their presentations of action research projects or in the group discussions at the meetings in the Change Room. In a few cases the participants described the collaboration with their critical friends in particular projects as will be described further later in this chapter.

It is difficult to interpret and draw some conclusions from the absence of discussion of critical friends in the Change Room especially in the light of increased emphasis on teachers' collaboration as will be discussed later in the thesis. The focus of the discussion was never directly on critical friends in the Change Room and participants were not asked to describe or explain their role in relation to their action research projects or their evaluation of the Change Room. The absence of references to critical friends might point to them having little influence but the fact that all of the participants made the effort to pair themselves together suggest the opposite. In my own experience a critical friend is very important for the learning process, for personal support, and critical feedback as discussed in chapter 8 on research methods. One of the participants in the Change Room pointed out the important role of the critical friend in an article on her action research project on critical incidents in the classroom, a research done before the Change Room.

The participant said:

I was so fortunate to be a part of a teachers' research group in the school where I did my action research. There was both professional and honest discussion about teaching that was invaluable for me and there I came into contact with a critical friend who gave me a very valuable criticism and became an important confidant in my work (Torfadóttir & Ingvarsdóttir, 2008, p. 64).

In the traditional Change Laboratory, the outside researcher has the tasks of preparing the group meetings, directing the meetings and giving feedback to the

participants. In the Change Room in Sjávarsíðuskólinn there were three people who divided between themselves the role of leading the work of the action research group, Hjördís the researcher, Rakel, the group leader and Hafþór, the outside consultant. I prepared the meetings with the group leader, led the work that was directly related to the Change Room as described in chapter 9 and participated in the discussions and presented the findings of the Change Room.

The group leader, Rakel, (40+ Icelandic 4) prepared the group meetings, sent out a plan for the timing of the meetings at the beginning of each school semester and invited group members to the meetings by email. Between meetings, the group leader had the responsibility to call for participant's presentations at the meetings, encourage new teachers to participate in the action research group and introduce the method of action research to new teachers. At the meetings the group leader directed the meetings, started them, welcomed people, introduced the agenda and directed inputs i.e. presentations, introductions, conversations, calls for information about critical friends etc. The group leader was also the time keeper, provided thanks for presentations and closed the meetings. The group leader's role provides the meetings with a structure that is both formal and purposeful. I consider it important that the group leader is from group of teachers' but not of school leaders because it is democratic and empowering for the teachers. It may also lessen the power differentials between the group and the outside consultant. Rakel, the group leader also participated in the meetings as one of the participants, presented her action research project and took active part in the discussions. All the participants participated in the discussions at the meetings and gave feedback to other participants. One participant gave the most valued and constructive feedback at the meetings and that was Hafþór, our outside consultant. At the same time as being part of the community his consultation operated as a tool for the participants in the Change Room as was described in the last section.

From the description above of the roles of the group leader and the outside consultant it is clear that the division of labour within the action research group was in some respect hierarchical. There were power differentials within the group as the outside consultant has the power of more knowledge of action research and

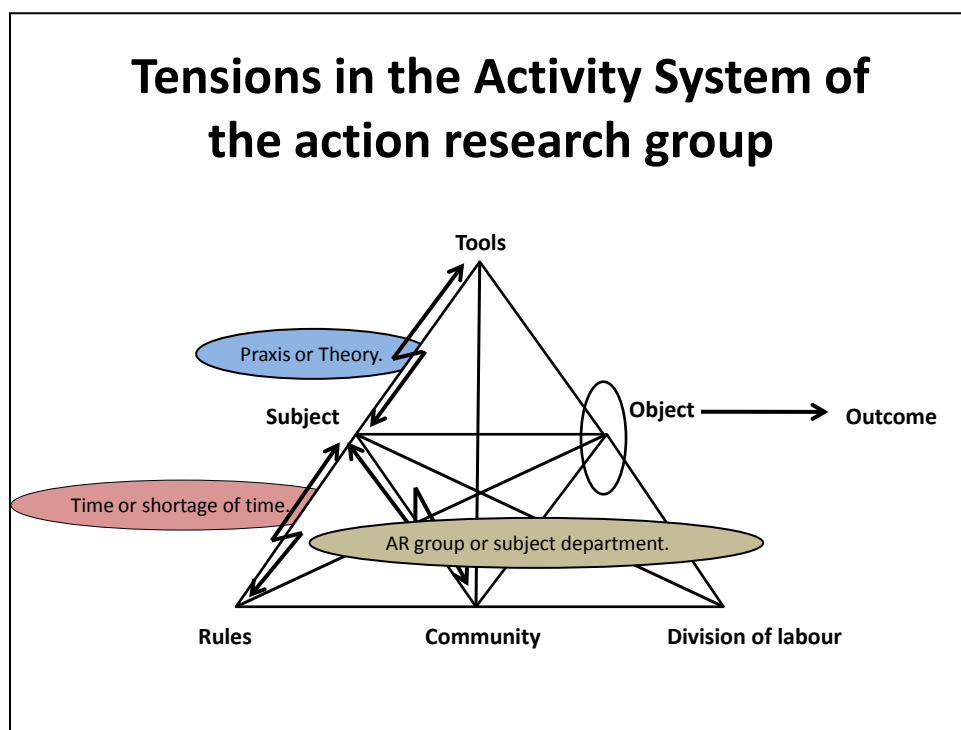
pedagogy than the other participants. My role in the action research group has changed from being one of the group members doing my action research to getting all the group members to work together at a research. When the action research group was established in 2005 we were eleven and most of us had worked together for a long time, co-workers, friends, equals. In the Change Room we were twenty-one and some of the group members did only know me in the role of a deputy head teacher. This is a change in the division of labour within the activity system of the action research group, I got a new role when the Change Room started, I was not only the subject working in my action research but I started to direct the meetings of the group. Then there was a danger that the participants would experience that I was doing a research on them rather than with them. That is a central factor in action research both from methodological and ethical point of view that persons do research with but not on people (Coghlan, 2003). I became more visible at all the meetings than before because I recorded and videotaped all the meetings, I transcribed minutes of the meetings and visualised individual action research projects into the activity system and showed to the group. These changes in my role can be viewed as both vertical and horizontal changes in the division of labour in the activity system. I experienced a role conflict as the division of labour changed in the activity system when I went into this new role of directing the Change Room at the same time continuing being a school leader (Research dairy, 10. 3. 2010). This was discussed in the methodology section on insider action research and it will also be discussed further in the discussion.

At the same time the division of labour is also in some respect democratic. People seem to go out of their usual role within the hierarchical system of Sjárvarsíðuskólinn and go into the role of the action researcher or a learner and give each other support in that role. It is also democratic in the sense that each participant is totally responsible for his/her action research project so the ownership of data is clear and that can have an empowering effect on the participants (Kincheloe, 2003; E. Kjartansdóttir, 2010b).

In the next section I will discuss the tensions or the manifestation of contradictions experienced in the action research group in the Change Room.

12.3 Manifestations of contradictions in the action research group in the Change Room

There are three tensions in the action research group in the Change Room. There is firstly there is a tension regarding lack of time for action research and group meetings in the action research group in the Change Room. Secondly there is a tension about the usefulness of the use of the activity theory and that is related to a tension between theory and praxis within the group. Thirdly there is tension regarding the subject departments that are part of the community of teachers in the action research group. See overview of the tensions and their placement within the activity system of the action research group in the Change Room in Figure 12-4. I will now address these tensions further.



(Adapted from Engeström, 2001)

Figure 12-4 Tensions in the activity system of the action research group in the Change Room.

12.3.1 Subject - Rules: Time - Shortage of time

There is a tension around lack of time participants have for the Change Room and action research. It is difficult to put time in one of the elements of the activity system of the action research group. Time is in some sense a tool or a prerequisite

for the participants being able to use all the tools within the system. The participants have to find that time themselves except when the group meetings are held at certain meeting times set in the weekly timetable within Sjárvarsíðuskólinn and then time can perhaps be viewed as a rule within the system. There is no special time allocated for teachers' action research or teachers' cross curriculum collaboration in the school's weekly time table in Sjárvarsíðuskólinn or in secondary schools in general in Iceland. It is generally acknowledged that the most effective continuous education for teachers is school based and occurs during the school year (Fullan, 1995; Guskey, 2000; Ingvarsdóttir, 2001). This was discussed earlier in chapter 3, Teachers' professional development and school based continuous education for teachers is also the educational policy of the Icelandic Teacher Union (Skólafélagið Kennarasambandi Íslands 2011-2014 (The school policy of the Icelandic Teachers Union 2011-2014), 2012). In this regard time for professional development is an important rule and I therefore place the tension around time between the subject and the rules; see Figure 12-4.

In Sjárvarsíðuskólinn there were two general meeting times during the week where there was no teaching going on i.e. Wednesdays from 14:50 until 16:10 and Thursdays at 11:15 until 11:55. These meeting times have been used for many kinds of meetings, for example general teachers' meetings, subject department meetings, teachers' union meetings and meetings of various collaboration teams on developmental issues and meetings with students. The action research group also used these meeting times when possible but that sometimes led to teachers being expected to attend two meetings at the same time and the meeting time on Thursdays was considered too short for deep conversations and longer presentations by participants. It was very common that participants felt at the end of the meetings that more time was needed.

Gunnar (50+ Mathematics 7) said at the end of the very last meeting:

The time passes far too fast (Meeting, 1. 9. 2011).

However teachers felt meetings in general were taking up too much of their time during the working day. When discussing possible time for meetings in the second

year of the Change Room the outside consultant stressed the importance of having more time for discussions but two participants warned about meetings taking too much time:

Hafþór:

I consider it [longer time] very important for our discussions. We need to get more time for our conversations, just to find the words so we can experience our own growth from this. We have just sat down when we need to stand up again. So, this is crucial if you are to develop this element in your activity.

Mist (50+ Icelandic 22):

But, we must not overdo it, i.e. the meetings. I just want to take precautions because this work absorbs you.

Hafþór:

Yes, I know.

Rakel (40+ Icelandic 4):

Yes, yes, we must not tie us completely down. ...
(Meeting, 16. 9. 2010)

Anonymous answers from the participant's evaluation of the Change Room in the spring of 2011 indicate that some experience a tension because of shortage of time for their action research projects, reflection and the group meetings. When asked about the negative outcomes of participating in the Change Room three mentioned shortage of time and when asked about what they experienced as the main obstacles in the Change Room then two mentioned shortage of time. Here are their anonymous answers:

Perhaps there was often shortage of time to reflect on ones work and not being able to execute one's ideas because of large class size.

Mainly shortage of time but that is nothing new.

Timing of the group meetings was not convenient

I didn't experience any obstacles unless perhaps that we are always running out of time at the meetings.

Shortage of time.

(Meeting, 10. 5. 2011, Participants evaluation of the Change Room)

Ásmundsdóttir's (2012) research on the action research group in Sjárvarsíðuskólinn described in section 12.1 also showed that the participants experiencing lack of time. She evaluated action research as a form of professional development according to an evaluation system developed by Guskey (Guskey, 2000). In the evaluation system provision of time is one of the factors that is considered to be important for teachers' professional development and her conclusion regarding time was that all the participants in her study from the action research group in Sjárvarsíðuskólinn experienced lack of time.

Ásmundsdóttir explained:

Time management or time provision is a factor that has great influence on teachers' professional development. Changes require time and it is necessary to provide teachers with time so they get opportunities to enhance their professional capacity (Guskey, 2000, p. 162).

One factor that all the teachers mentioned in the interviews was lack of time. They found it hard to find time to do their research alongside teaching. One of the respondents pointed out that good organisation is most important when one is researching own practice.

It calls for a very disciplined methods, one can't avoid that if one is going to be able to manage all the work (Ásmundsdóttir, 2012, p. 58-59).

Ásmundsdóttir's conclusion is in line with my findings in the Change Room as described above. This is not a tension only experienced in the Change Room because the teachers were also experiencing this tension of lack of time for their action research projects before the Change Room. It is more likely to be a general tension that teachers experience when doing action research in Sjárvarsíðuskólinn. Similar findings appeared in a pilot study in the spring of 2008 on the attitudes of the participants in the action research group in Sjárvarsíðuskólinn towards the influence of their participation in the action research group (Thorgeirsdóttir, 2009). Then some of the participants also complained about lack of time for data processing and reflection on their work (Thorgeirsdóttir, 2009). Lack of time within the school's timetable for teachers' research and collaborative meetings with co-workers has also been a concern in action research in England (Black, 2005).

12.3.2 Subject - Rules: Praxis - Theory

Hafþór discussed with us how important it is for teachers to use pedagogical literature as a tool to help us to develop practice and provided information about literature and theoretical ideas at the group meetings, in addition to sending us material via email. He has also explained to us that he understands how time consuming and difficult the teaching job is and how hard it is to find time and energy for theoretical reading and connecting it to practice.

I have been concerned for a long time about one thing regarding action research in schools, and I have often talked about it, how difficult the work is. I know it so well, I was here for 20 years. How the work absorbs you. And how hard it is to go out of this gear and into academic discussions, to find deeper argumentations, connect to literature and combine it with praxis and really do experiments with it (Meeting, 16. 9. 2010).

At an earlier meeting in the Change Room when discussing the methodology of the Change Room with an expert from the University of Iceland, Dr. Þuríður Jóhannsdóttir, Hafþór had also raised similar worries but then regarding the application of the Activity theory in the Change Room. In response one participant, Bjarki, stressed that teachers are practitioners but not theorists.

Hafþór, (the outside consultant):

You are perhaps not reading a lot about new things and theories.
Is there a danger that this will turn around in cycles?

Þuríður Jóhannsdóttir (expert from the University of Iceland):

That was what I was wondering because they [theorists; Engeström etc] are really putting emphasis on the need for theoretical input.

Hafþór:

Theoretical input. Yes, that is what I am thinking about.

Bjarki (60+ Danish 23):

There is nothing wrong with us being focused on the praxis, we are practitioners. We like to do something that shows results quickly. We are not creating grand theories as such. We like to do something that can be seen tomorrow or the next day. That is our role. You can do something different ... (Meeting, 18. 3. 2010).

These remarks indicated that Hafþór and Þuríður had doubts whether the participants in the Change Room were ready for the theoretical aspect of the Change Room and doubts from Bjarki of the relevance of the theory to his practice.

Anonymous answers from the participant's evaluation of the Change Room in the spring of 2011 indicate that some participants experienced a tension in the Change Room because they did not like or did not understand activity theory.

The form and the theory around the Change Room were unattractive at the beginning. An obstacle that I needed to overcome.

(Meeting, 10. 5. 2011, Participants evaluation of the Change Room)

Before we started the Change Room I hoped that the participants themselves would visualise their action research projects in the activity system of the classroom and would themselves use the activity theory in their presentations and reports on their action research projects. However I never asked the participants to do that and I realised that it was unlikely to happen and I decided to do it myself i.e. visualise their action research projects in the activity system of the classroom and present the results to the group at the meetings.

Two participants made use of activity theory in their presentations of their research, Jónas (40+ Mathematics 11) in his presentation on “alpha, beta gamma” at a conference on school development in Reykjavík and Ingunn (50+ School leader 24) in her report and journal article in Netla, on her project, “Actual attendance” (Erlingsdóttir, 2011, 2012).

Ingunn argued:

Each activity system has a community, certain rules, division of labour and tools and within each institution we have many activity systems. The activity system of Sjárvarsíðuskólinn is multivoiced and as has been discussed here before the attitudes of the subject (teachers and staff) and the object (i.e. students) do not go hand in hand concerning actual attendance. Tension between subject and object appears clearly when we look at the school as an activity system. It is necessary to consider the reasons for the tension and find ways to resolve the tension in order to enhance the schooling (Erlingsdóttir, 2012, p. 14).

In spite of the tension between theory and practice some of the participants really appreciated the theoretical connection of the activity theory in the Change Room as was discussed in the first section of this chapter on the evaluation of the Change Room and it was especially apparent at the follow up meeting of the Change Room.

The third tension experienced in the action research group in the Change Room was related to the community or more specifically to the subject departments of participants. Now I will explain that further.

12.3.3 Subject - Community: Action research group - Subject department

Subject department is in general a very important organisational feature in secondary schools in Iceland and in Sjárvarsíðuskólinn it is a strong cultural element. The subject departments create the school curriculum in each subject and they have the role of deciding who teaches which course each semester and what textbooks and other teaching and learning material is to be used in each course each semester. A semester plan is created for each course where the coverage of learning material, main assignments and the weightings of components in the final grade of each course is outlined. When only one teacher, teaches a course he/she creates the semester plan and has a certain freedom within the curriculum. However it is common that two to three teachers teach the same course and in those cases it is compulsory that they follow the same semester plan that is agreed by the subject department. All students take the same final exam in each course that the teachers usually create together if two or more teachers teach the course. This leads to standardisation of teaching and learning in the same course.

This culture of collaboration within subject departments is valued and considered very important for new teachers. Most of the subject departments are grounded on an academic subject and most secondary school teachers have strong allegiances to their own academic subject. However this research raises a question if the subject departments puts certain constrains on innovation and the development of classroom practice in the school? Some of the teachers participating in the Change Room experienced tension because of this arrangement and felt it put a strain on their intervention measures in their teaching practice. The teachers therefore

choose to do their action research project with a class they alone taught if that was possible. Teachers' cross curriculum collaboration in the action research project by Bjarki (60+ Danish 23) and Sandra (40+ History 20), on students' project work, see Appendix 12.1, was carried out in an optional course where they alone created the course description and the semester plan.

Jónas (40+ Mathematics 11) presented his action research project, alpha - beta - gamma ($\alpha\beta\gamma$) on cooperation with students on assessment, see section 11.5.2. There Jónas developed a system for individual assessment in Mathematics i.e. the weighting of components in the final grade varied between individual students. Jónas project was first with a class in the third year of study on the economic study line where he was the only teacher in Mathematics teaching that course. He then continued teaching the class in the fourth year of study and continued with the alpha - beta - gamma ($\alpha\beta\gamma$) system with the class in their fourth year of study. Jónas informed us that he was the only teacher using this assessment system in the Mathematical department.

Jónas explained:

The big issue is, that I have not transferred this [alpha - beta - gamma ($\alpha\beta\gamma$)] over to other classes where I am teaching with other teachers as I don't want to start a war. ... I am the only one using this system and only in this year of study because in other courses I am always teaching with someone else. This is the class that I control myself because I am alone and have been for a long time. So I have not implemented this system elsewhere. First I want to have a completely formed idea where I can bring a pamphlet on alpha - beta - gamma ($\alpha\beta\gamma$) (Meeting, 7. 12. 2010).

Jónas did not want to present the idea of alpha - beta - gamma ($\alpha\beta\gamma$) to his subject department until he had developed it further and he also made it clear that it was easiest to carry out such interventions on students' assessment where he was the only one who was organising and making decisions on the assessment in the course.

Elísabet, (30+ Geology 1), in her second year of teaching Geology at Sjávarsíðuskólinn experienced tension between coverage of curriculum material and deep learning and was then very grateful for being the only teacher in that course where she was doing her action research project, see Appendix 12.8. At the same time she was grateful for the support she received from the head of department in Geology in the other course she was teaching.

I was both teaching a class in the language and social science department and I was alone with them, that is the only Geology teacher. Then I taught another program that I shared with Kári and one other teacher. That was a natural science class. So then I needed to coordinate with him [Kári] and that was fine and I also had support from him. He was head of department and knew how everything worked. On the other hand I enjoyed being free with the language and social science class and there I went on my own pace. I wanted them to understand the material and got into small difficulty not having covered all the material according to the plan of the semester. I was though able to save it but it was really good to have these two at the same time (Pair interview about the past 9. 12. 2009).

At a meeting in the Change Room where Rakel (40+ Icelandic 4) presented her action research project on Expression in Icelandic, see Appendix 12.7. Rakel explained that she did her project with a class in the language study line where there was only one class in each study year so she was the only teacher teaching this course. She also explained that there were two more lessons per week in Icelandic in the fourth year of the language study line than in the natural and social science study lines.

Rakel explained:

Therefore there was space to do something else than to cover the text with great speed (Meeting 7. 12. 2010).

Here we see two tensions connecting together between two activity systems, a tension between covering the material and deep learning in the activity system of the classroom and a tension between doing action research and following the rules of the subject department in the activity system of the action research group.

In a Med thesis on an action research project after the Change Room, one of the participants in the action research group explained how she experienced a tension between her action research project and the expectations and demands from the subject department. Ragnheiður (20+ German 0) was in her first year of teaching and her aim was to work according to her own professional theory of practice and promote the student's learning autonomy within the classroom. She used various peer and group creative assignments, cooperative learning and emphasised that the students got to know themselves as learners and she had discussions with the students about the learning and teaching methods (Selmudóttir, 2014). Very soon she experienced tensions because there were four teachers teaching the same course and all the exams, both the final exam and the three exams held over the semester were standardised i.e. the same for all the classes. Ragnheiður found it hard to connect together her teaching methods and this standardisation and traditional exams within the subject department.

Ragnheiður explained:

It became soon clear to me that the collaboration and the assessment in the German department was characterised by great standardisation between the teachers that doesn't create a lot of leeway for each teacher to work according to his/her own conviction. I also saw that the traditional assessment methods used in the department would be constraining for my work of enhancing my students' learning autonomy (Reinders, 2010) (Selmudóttir, 2014, p. 83).

These are examples of the teachers avoiding and experiencing tension between themselves as subjects and their community, the subject department. These tensions can also be viewed as a role duality and role conflict between their role as

an action researcher in the action research group and their role as a subject teacher in a subject department. This can therefore be viewed as a conflict between elements within the activity system of the action research group in the Change Room, see Figure 12-4 above or as a conflict between two activity systems, the activity system of the action research group and the activity system of the subject department, see Figure 12-5 below.

When we look at it as a conflict between two activity systems, three examples of how the tension is experienced by the teacher are provided, see Figure 12-5. Firstly, a tension between the teachers' innovation in classroom practice through their action research projects and the subject department's standardisation for example of covering the curriculum. Secondly, a tension between the active and creative students' assignments and the subject department's standardised tests, both exams during the semester and the final exam in the subject. And thirdly, a tension between collaboration with students' that requires flexibility and the coordination within subject departments with a rigid semester plan and fixed timing of exams etc. This could be a sign of a fourth level or quaternary manifestation of a contradiction between these two activity systems, the action research group and the subject department. Changes that teachers in the action research group are making in their classroom practice are making disturbances at departmental level or are calling for changes in the subject department or at departmental level.

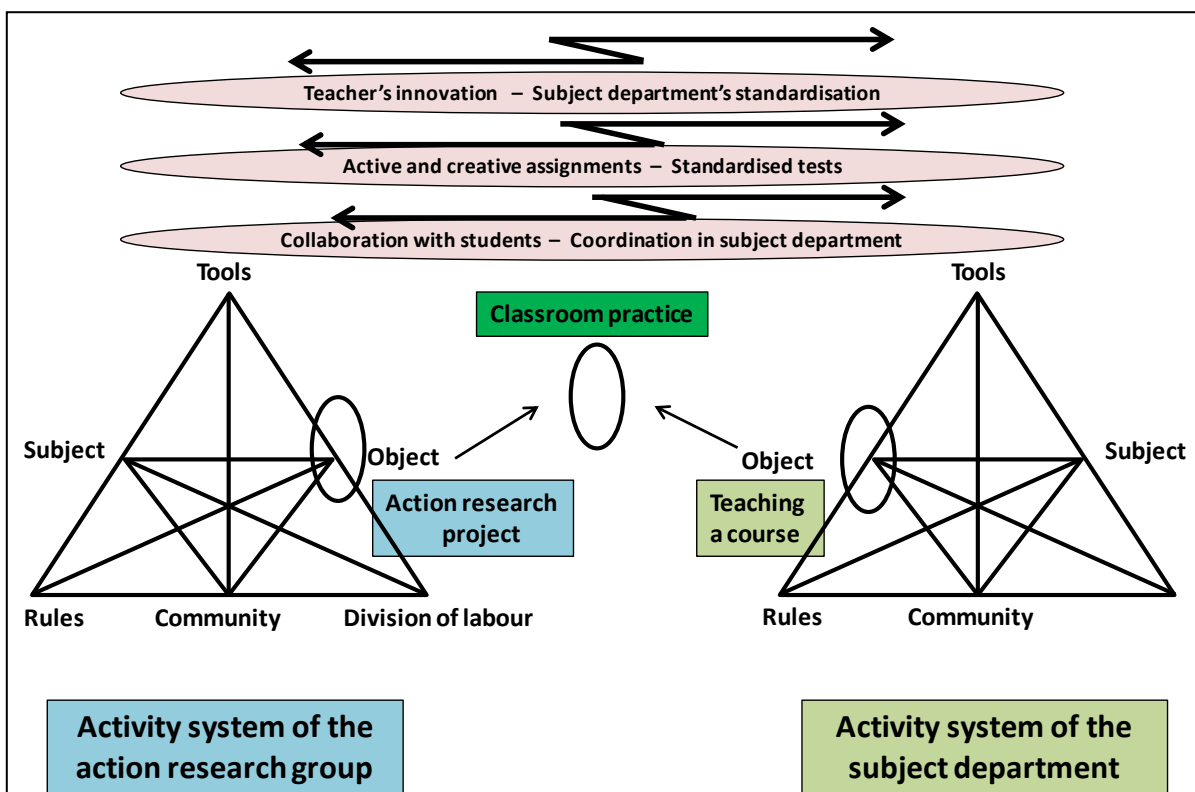


Figure 12-5 Tensions between the activity system of the action research group and the activity system of the subject department.

Although the participants in the action research group in the Change Room were experiencing tensions in relation to their participation in the action research group the positive influences were overriding and the participants' focus was on developing their classroom practice through their participation in the action research learning process. I will now describe the modalities of individual and collective learning of participants in the Change Room.

12.4 Modalities of learning of the participants

Hodkinson, Biesta and James (2008) argue that from a cultural approach towards learning it is important to understand both how individuals learn through participation in a learning culture and how a learning culture influences the learning of individuals. Learning is both individual and collective and it is embodied i.e. learning involves mental, emotional, physical and practical processes (Hodkinson, et al., 2008).

When looking at the learning process in the Change Room it is important to consider both individual and collective learning processes or modalities of learning of the participants. The unit of analysis in my study is collective i.e. the activity system and that is the main focus in the thesis. However it is necessary also to take into consideration that the action research projects are on individual level and therefore I consider appropriate that the learning processes are also viewed on individual level. It is a more holistic view of the learning process of individuals to connect together modalities of individual and collective learning (Hodkinson, et al., 2008).

A concept from Barbara Rogoff can be used to describe the learning process within the expansive learning process of the group in the Change Room that connects together individual and social learning in the group. The concept “participatory appropriation” (Rogoff, 1995) enables us to look at the learning process at the same time as an individual and a social process within a cultural activity or a personal, interpersonal and cultural process all at the same time, i.e. a sociocultural process. It is through the actual participation in the discussions at the meetings and doing their action research projects that the participants change and in the process they become prepared to continue that activity, the participation itself is the learning process.

A person participating in an activity is involved in appropriation through his or hers participation. Appropriation occurs in the process of participation, as the individual changes through involvement in the situation at hand, and this participation contributes both to the direction of the evolving event and to the individual’s preparation for involvement in other similar events (Rogoff, 1995, p. 153).

It is possible to see the learning process in changes in participation of the participants in the action research group, how they increasingly took more responsibility by active participation; introducing and presenting their action research projects at the group meetings in the Change Room. Individual

presentations of action research projects increased from 5 in 2009-2010 to 10 in 2010-2011.

The process is inherently creative, with people actively seeking meaning and relating situations to each other (Rogoff, 1995, p. 159).

Three modalities of individual learning and three modalities of collective learning identified in the Change Room will now be described.

12.4.1 Modalities of individual learning

Affirmation

The participants in the Change Room learned through doing their action research projects and when preparing their presentations of their projects they also learned by reflecting upon their projects. Additionally when the participants presented their projects for the group they learned through getting a personal and professional confirmation that they were making changes in the right direction, that their vision, values and ideas were shared in the group. The action research group becomes their mirror i.e. where they get praise, encouragement and assistance with interpretation of their projects. The meetings of the action research group also help the group members to create a mutual understanding of the object of learning.

Here are three examples from discussions at meetings in the Change Room of the mirror effect that can lead to participants' affirmation.

The first example is from a meeting where Helena (30+ Icelandic 1) gave a presentation of her action research project on active student learning in Icelandic, involving creating students' databank on the intranet and students' discussions in the classroom in the "Court of sagas".

Jónas (40+ Mathematics 11) commented and asked a question:

I like to thank Helena for her enjoyable story of the struggle with the learning material. I think this applies in many situations. It is very important to create a certain atmosphere in the group. But I was wondering if they [the students] had been preoccupied with

your booking system of their contributions in lessons (Meeting, 18. 11. 2010)?

Jónas gave a praise and affirmed that this was an issue shared with other teachers, showed empathy and put forward a question in relation to assessment of these new teaching methods.

The second example is from a meeting when Rakel (40+ Icelandic 4) presented her action research project on expression in Icelandic.

Ingunn (50+ School leader 24) commented:

From Rakel's presentation it became clear that one thing is prominent in her teaching; she gave a short introduction as a model then the students did something and presented that at the end. This is what we like to see all the time, short introductions, students work and give an account of it. This is what one would like to have in all lessons whether it is expression or something else (Meeting, 7. 12. 2010).

Here Ingunn gives praise to Rakel for her emphasis on students' participation in the learning process in the lessons. Ingunn indicates that Rakel has set a good example that other teachers can follow in their teaching and by that Rakel gets an affirmation that she is making changes that are valued by the group.

The third example of learning through affirmation is from a meeting where Oddur (50+ Chemistry 7) was introducing his idea of an action research project of self-reflection through working with a student in teacher education from the University of Iceland. Oddur described it as "mirroring" himself in this collaboration.

Oddur described:

Hafþór (Outside consultant) sent me a teacher student, I am mirroring myself in this collaboration with Heiðar and it is going very well. It is really enjoyable to get a man from the outside to

teach. He sits in the classroom and we discuss matters. It is really wholesome and good. That is where I am now.

Elísabet (30+ Geology 1) asked:

So you go into self-reflection at the same time as you are reflecting on his [teacher student] teaching?

Oddur answered:

Yes, one experiences emotions when you watch another one teach, he presents the material differently. It works fine. Then you start thinking, you steer your teaching into a better direction.

Hafþór (Outside consultant) commented:

What a great idea Oddur. I just don't understand why I haven't thought about this myself. When you are guiding a teacher student then it becomes a research and you can't help it. One does write down notes in the diary (Meeting, 3. 2. 2011).

Here Elísabet asks about confirmation of the core of his idea and Oddur gets an opportunity to explain it further. Hafþór, the outside consultant gives Oddur praise for his idea, expresses approval and confirms it as a proper action research. It was most common that the outside consultant gave praise and encouragement and more examples of that have been given here before in this chapter.

The participants in the Change Room also get a confirmation that the problems they are facing in the action research projects and in teaching in general are not personal problems that only they are dealing with in their teaching but rather institutional or cultural problems that many group members are also facing in their teaching.

The following are three examples, from the participants' evaluation of the Change Room, of teacher's answers to the question: What have you learned about your practice through action research? Here participants are describing affirmation of their shared object and shared problems in classroom practice.

Three participants describe their learning:

As a new teacher I have found it useful to learn that experienced teachers are dealing with similar problems as I, I am not ... alone in the world.

Teachers are dealing with similar work apart from the subject that you teach and that is supportive for me.

It is useful to see what other teachers are doing and struggling with. Many things are revealed that is useful for me in my work

(Meeting, 10. 5. 2011. Participants' evaluation of the Change Room).

Transferability

The meetings in the Change Room provided a learning opportunity for group members, especially a chance to relate the knowledge of the action research projects of other group members to their own projects and teaching experience. Teachers do not generalise from their findings when they present their action research projects but other teachers can learn from their descriptions. Evans et al. (2000) suggest that we use the word transferability for this process of sharing:

In this mode of research the processes of research are shared so that the outcomes of the research may be disseminated through 'transferability' rather than 'generalisability' (Evans, et al., 2000 , p. 406).

This process of “transferability” involves connections to the teachers’ “craft knowledge” i.e. own teaching experience, the problems they are facing in their practice and their current action research projects. It also provides a lot of new ideas for future action research for group members both ideas of how to use certain research methods and how to carry out new methods in classroom practice i.e. teaching, learning and assessment methods.

Below I present three different examples of transferability of research that I identified in my study.

The first example of transferability of research is in relation to students' assessment at a meeting in December of 2010. After Jónas' first presentation of his action research project on alpha - beta - gamma ($\alpha\beta\gamma$) (described in section 11.2.3); Mist, a teacher in Icelandic used that idea in teaching Icelandic to allow students to decide if their project assignment, a visit to a care home for the elderly should weight 5%, 10% or 15% in the total assessment of the semester (Meeting, 7. 12. 2010; Interview with Mist, 4. 2. 2011). Here Mist learned about a new way to structure assessment on individual basis and she employs it in her teaching subject, Icelandic, but in a different way from how Jónas has done in his Mathematic class.

The second example comes from Rakel (40+ Icelandic 4) presenting her action research project on expression in Icelandic. Rakel explained that after learning about the use of diary in action research by the action research group members and using a diary herself in her action research project for one year Rakel started to use a diary as a teaching method. Students write a diary about their learning experience as an assignment and a form of self-assessment in Icelandic for example in her action research project on students' expression. Each student was given a small format diary and allocated time in each lesson in expression for reflective writing (Meeting, 7. 12. 2010). Rakel learned about using a diary in action research as a research method for reflecting on her practice and she applies it to her teaching by letting the students write a diary where they reflect on their learning experience.

The third example of transferability of research is from a meeting in May of 2011 when Andrea (40+ Mathematics 6) presented her action research project on using a social network on Facebook for each class she taught. There she put information about material she put on the school's intra net, reminded the students about homework and exams and had discussions with students about mathematical issues. At the meeting three teachers connected her description with their own teaching experience. Elísabet (30+ Geology 1) informed the meeting that she and Andrea were sharing the social network on Facebook for one class in their first year of studies (Meeting, 10. 5. 2011).

Sandra (40+ History 20) explained how she had used the discussion space on the intra net for similar purposes and to ensure that the conversations with individual students between classes were open and students had equal access to them. Sandra prefers to use open spaces for discussions with students rather than to use individual e-mails as the information flow is more on equal terms in the student group if open space is used (Meeting, 10. 5. 2011).

Rakel (40+ Icelandic 4) has also invited students to put questions before final exams on the open space at the intra net but her experience is that the students have not used it a lot. Recently one student suggested that the class would have a group with Rakel on Facebook and she agreed and asked the student to arrange it and he did (Meeting, 10. 5. 2011).

Here the teachers are using transferability of research to connect to their experience of having used a similar teaching method in their subject either on Facebook or on the school's intra net. By this transferability they get affirmation that they are moving in the same direction and this discussion also reflects that many teachers are really trying to find ways to utilise in teaching the new technology on the Internet.

The teachers are aware of the usefulness of learning about their colleagues action research projects. They learn about positive and negative aspects of using particular teaching methods and they also learn about new methods to change their teaching practice. The following are three answers from participants about the usefulness of the meetings in the Change Room from the anonymous participants evaluation of the Change Room at a meeting in May 2011:

Very useful to learn about the methods of others, pros and cons.

It has helped me to get ideas, good advice, insight into other subjects, enhanced the atmosphere in the teaching room.

It supplies raw material for me to transfer and process in my teaching (Meeting, 10. 5. 2011, Participants evaluation of the Change Room).

Creating own professional theory

The participants in the Change Room are not only getting affirmation that they are moving into the right direction and getting new ideas to change their practice from the research of the other participants. They are also changing their professional identity by creating new situated knowledge in their action research projects. They are becoming more aware of their own values through discussions of their tensions in classroom practice and changing their practice in the direction of their own values by trying to solve the tensions through their action research projects. Hodkinson, Biesta and James (2008, p. 40) have called this process “learning as becoming”. The individuals learn simultaneously through participation and their proceedings of creating and re-creating their own identity or "habitus" as Hodkinson et al prefer to call it in (2008).

Thus, learning can change and/or reinforce that which is learned, and can change and/or reinforce the habitus of the learner. In these ways, a person is constantly learning through becoming, and becoming through learning (Hodkinson, et al., 2008, p. 41).

Another useful way to look at this process of “learning as becoming” is to view it as the development of teachers’ subjective professional theories i.e. teachers’ personal theories about learning and teaching i.e. their classroom practice (Ingvarsdóttir, 2004).

In the professional theory, we see the combination of values, theoretical learning in the subject and pedagogy and learning from experience in practice through reflection and discussions with fellow practitioners (Ingvarsdóttir, 2004, p. 39).

Ingvarsdóttir did a research among teachers in secondary schools in Iceland in English and natural sciences that showed that the most influential factors on the development of teachers’ professional theory were their students, former teachers, the teaching subject, co-teachers and their education in pedagogy (Ingvarsdóttir, 2004).

In the Change Room the focus is on the influence of the participants' participation in the expansive learning cycle for example through peer discussions on tensions and action research projects and there we see the influence of co-workers. We can also see clearly the influence of the participants' collaboration with their students for example through their increased consultation with the students.

The first example of participant's creating their own personal theory of practice is Mist (50+ Icelandic 22) but her action research was described in section 11.2.

Mist explains:

I listen more to the students and the teaching is becoming more a conversation with them [the students] and discussions. ... So now I approach my practice more to organise students' work but not delivering some content (Meeting, 7. 12. 2009. Peer interview about the past).

If I look back to analyse what has been the main purpose of my action research through the years I think the answer will be that I am always searching for opportunities to make students a more effective and creative participants in schoolwork. I do it by asking different questions all the time, taking risks in my teaching and meeting students from a different standpoint to produce more creative learning opportunities for both myself and my students and hoping that they can feel like active participants instead of passive victims in the system (Presentation in Sjárvarsíðuskólinn, 9. 3. 2011).

The change in her identity involves changes in how she no longer sees herself as a provider of knowledge but rather as a facilitator of students' creative learning and how she has become a risk taker in her work. Mist is conscientious about the changes she has made and that it has changed her professional identity; she has experienced going through "learning as becoming" (Hodkinson, et al., 2008).

Mist's action research project on connecting the generations in a visit to a care home for the elderly was described in section 11.5.1. Great majority of the students participating in the project were positive towards it in their anonymous answers and seven of the 38 students acknowledged in their answers that this project was something "different" for them, a change from ordinary teaching and learning methods in the school and they appreciated that change. Here are two examples of a student's anonymous answers:

The project with the care home for the elderly was very good when you see the outcome of it. It took a rather long time and could be shortened a little bit. It will be enjoyable to meet the respondent again and show her the project. This project broke up the traditional teaching which is fine.

I thought it was very enjoyable. Great fun to get an opportunity to do something different in Icelandic, something else than sitting, reading and working on assignments. Our respondent was also very amusing (Students' anonymous answers before the last visit, 14. 2. 2011).

Another example of a change in individual's identity is Gunnar (50+ Mathematics 7), who did an action research project on Reading in Mathematics, described in Appendix 12.2.

Gunnar asserts:

In organised teaching I have changed more and more from being a teacher into becoming a support teacher i.e. working more with feelings, fear, self-esteem, working modes, learning how to learn, get them to read. I am teaching them very little, more trying to encourage them, encourage them to read more, group dynamic work with them. ... I am very happy with that, I feel I am getting better results now with these methods than with the endless calculations. That is not a holistic approach but only twenty to thirty

percent. I feel I have changed. I feel I am a better teacher
(Meeting, 7. 12. 2009. Peer interview about the past).

Gunnar has put a lot of emphasis on the students reading Mathematics and he maintains that reading Mathematics requires different reading skills than ordinary linear reading of texts in other subjects and has created a new concept for that type of reading mathematical text i.e. “shift reading”. In “shift reading” you do not follow the lines but you jump back and forth between places on the page, between the symbols in the formulas, graphs and words (Hilmansson, 2011b). This can be viewed as a reflective reading where the learner has to shift his attention back and forward in the text for example shift his attention from linear reading of the text towards looking at a formula and connecting the two together by reflection, then back to the text etc. Gunnar explains to the students the concept of “shift reading” and the importance of reading mathematical text in a certain way. Gunnar is trying to involve the students more actively in their learning process by developing a method to enhance the reading competence of the students but he is also fighting against the students’ disengagement with the textbook in Mathematics.

Gunnar has presented student’s anonymous answers to questions about their learning experience and following are three examples. These answers suggest that the students are very well aware and conscious of Gunnar’s special emphasis on reading Mathematics and that it is different from the methods former teachers in Mathematics have used at the compulsory school level.

Students answers:

Personally I find the examples easier when I read the text first. That is exactly what Gunnar put emphasis on and takes us through. So I am happy with the classes and you learn a lot there. ... Gunnar’s way of teaching really worked well in my class and surely many other classes.

Gunnar wanted us to read the text more and not just doing calculations, one doesn’t grasp it at first but all the understanding lies in the text and the training in the exercises.

My grade has increased since compulsory school and I understand the learning material much better since I started reading and learning the model examples. Personally, Gunnar's method suits me very well. Much more fun than to calculate endless examples! My grade is flying up (Hilmarsson, 2011b).

These quotes from the students indicate that they feel positively about the increased emphasis on reading Mathematics and the metacognitive process of discussing how you learn as Gunnar does with his students may have positive impact on students' learning.

12.4.2 Modalities of collective learning

Knotworking

Knotworking is the typical interaction mode in co-configuration according to Engeström and is characterised by performance involving tying, untying and retying different aspects of activity by persons and activity systems that are not closely linked together (Engeström, 2008a).

I think that the Change Room and the action research group meetings have the potential to encourage knotworking of the participants and the possibility of the co-configuration of their professional development where "a living growing network develops between customer, product and company" i.e. the teacher, the student, the learning and the college (Victor & Boynton, 1998, p.198-199 as cited in Engeström, 2008a, p. 195).

In knotworking the focus must be on the knot and the connections between the individuals who they themselves take the power of tying the knots according to Engeström:

In knotworking, collaboration between the partners is of vital importance, yet it takes shape without rigid, predetermined rules or a fixed central authority (Engeström, 2008a, p. 20).

The participants in the Change Room are increasingly engaged in collaboration projects with other participants and other teachers inside and outside

Sjávarsíðuskólinn, some involve long-term group work other knotworking both within and cross teaching subjects. See overview of the collaboration of participants in the Change Room in Table 12- 2.

I think that the Change Room and the action research group meetings encourage knotworking of the participants both within the action research group and outside it. There is an increase of collaboration across faculties for example in a new optional course organized by teachers from two faculties, teachers in English and Sociology creating a cross curriculum students' assignment; teachers working with teachers students from the University of Iceland, teacher working with an old people's home near Sjávarsíðuskólinn, teachers working with same subject teachers in a compulsory school in the neighbourhood and teachers working with other teachers in foreign countries. In 2010 we had teachers in History and Danish working with a secondary school in Denmark and teachers both in history and life-skills working in projects with other teachers in Europe.

It is of course not only action research and the Change Room that is enhancing knotworking in Sjávarsíðuskólinn. There are also other factors at work both within Sjávarsíðuskólinn, for example that teachers can apply for special grants to prepare a cross curriculum courses and projects and the society at large, for example effects of the globalisation and a general trend of increased collaboration between different professions in the social services. But the Change Room is definitely one of the contributing factors. Discussions at the meetings enhance participants understanding of the teaching practice in other subjects, both their similarities and differences.

Pseudonym	Biographies	Collaboration
Andrea	(40+ Mathematics 6)	Working with Iris teacher in Danish on designing questions for students' evaluation. Collaboration with Jónas on developing new course descriptions for the new school curriculum.
Anna	(20+ Biology 1)	The University of Iceland, a student in teacher education.
Bjarki	(60+ Danish 23)	Working with Sandra, teacher in History, co-teaching an optional course. A secondary school in Denmark. Cross curriculum collaboration on developing new course descriptions in foreign languages in the new school curriculum.
Dagmar	(50+ Citizenship 9)	Working with Oddur, teacher in Chemistry, visiting each other classroom. International project on teaching sustainability in Citizenship.
Elisabet	(30+ Geology 1)	One year long continuous educational course for secondary school teachers in natural sciences in Iceland. Co-teaching Geology with a teacher from the department, trial for the class based periodic system. Developmental project on cross curriculum students' assignments with Jónas and one other teacher in Mathematics.
Finnur	(30+ English 2)	Co-teaching with Lára, trial for the class based periodic system. Development project with Lára, teacher in English on a plan for support in English for students with learning difficulties. Developmental project with a teacher in Sociology on a cross curriculum students' assignment in mass communication.
Gunnar	(50+ Mathematics 7)	Collaboration with the University of Iceland; coaching a student in teacher education
Helena	(30+ Icelandic 1)	Developmental project with Rakel, teacher in Icelandic on teaching methods in the second year of study.
Ingunn	(50+ School leader 24)	Working with school-leaders on the development of the new school curriculum. Working with Telma, school counsellor on developing service for students who fail exams and need to repeat a year of studies. On the board of Society of Secondary Schools' Leaders.
Íris	(50+ Danish 19)	Working with Andrea teacher in Mathematics on designing questions for students' evaluation.
Jónas	(40+ Mathematics 11)	Developmental project on cross curriculum students' assignments with another teacher in Mathematics and Elisabet, a teacher in Geology. Developmental project with a primary school with one other teacher in Mathematics. Collaboration with Andrea on developing new course descriptions in Mathematics for the new school curriculum.
Katrín	(20+ Chemistry 2)	Developmental project with Oddur, a teacher in Chemistry on developing new course descriptions in Chemistry for the new school curriculum. One year long continuous educational course for secondary school teachers in natural sciences in Iceland. University of Iceland, students in teacher education.
Lára	(60+ English 17)	Co-teaching with Lára, trial for the class based periodic system. Development project with Lára, teacher in English on a plan for support in English for students with learning difficulties.
Magnús	(60+ Physics 8)	Foreman of the board of the Society of teachers in natural sciences.
Mist	(50+ Icelandic 22)	Collaboration with an old peoples home. Cross curriculum collaboration on the development of the new schools' curriculum. Collaboration with teachers in Icelandic from different schools in a committee by the Ministry of Education for developing the new curriculum for secondary schools.
Nanna	(50+ Biology 0)	One year long continuous educational course for secondary school teachers in natural sciences in Iceland.
Oddur	(50+ Chemistry 7)	Developmental project with Katrín, a teacher in Chemistry on developing new course descriptions in Chemistry for the new school curriculum. Cross curriculum collaboration with teachers in the natural sciences and school leaders on the development of the new schools' curriculum. One year long continuous educational course for secondary school teachers in natural sciences in Iceland. Collaboration with the University of Iceland; coaching a student in teacher education.
Petra	(50+ School leader 20)	Working with school-leaders on the development of the new school curriculum. Working with Telma, school counsellor on developing service for students who fail exams and need to repeat a year of studies. On the board of Society of Action Reserch in Iceland.
Rakel	(40+ Icelandic 4)	Developmental project with Helena, teacher in Icelandic on teaching methods in the second year of study.
Sandra	(40+ History 20)	Working with Bjarki, teacher in Danish, co-teaching an optional course. A secondary school in Denmark. Working with European History Teachers in a project Historiana. On the board of the Society of History teachers in Iceland. Developmental project with teachers in German and Sociology on a new cross curriculum optional course called Berlin. Collaboration with the University of Iceland; coaching a student in teacher education.
Telma	(50+ Student counsellor 12)	Working with Ingunn, head of teaching on developing service for students who fail exams and need to repeat a year of studies. Collaboration with the Society of Step families. Collaboration with the board of Society of School Social Workers.

Table 12-2 Examples of collaboration of the participants' in the Change Room

Twice during the Change Room, participants referred to how much they enjoyed teaching a class together in a course. In both cases they were critical friends although they did not refer specially to that fact at the meetings in the Change Room. Two pairs were teaching a class together, one pair in an optional course they created together that was based on students' project work. Bjarki (60+ Danish 23) and Sandra (40+ History 20) who were critical friends, both expressed appreciation of teachers working together in pairs in the classroom:

Bjarki described:

Interesting to teach with another teacher because disciplinary measures are different, Sandra is so soft. I firmly recommend teaching in pairs, one lenient and the other one not lenient (Meeting, 4. 2. 2010)

Sandra also expressed similar appreciation at another meeting:

We are always both in the classroom in the classes. There is a lot of work for us in assisting them [the students]. We can answer different question and our different strengths are well utilised. We meet regularly on Tuesdays to prepare the course (Meeting, 11. 02. 2010).

The other pair taught together in a developmental project with teaching in periodical system where a course was taught for 8 weeks, 12 lessons per week.

Lára (60+ English 17) described:

Me and Finnur (30+ English 2) are in collaboration and there is also the good and the bad cop. You can guess who is who. I miss teaching together and regret that we gave up teaching together the whole period. It is very illuminating to see and hear another practitioner in the classroom. We are enjoyably different (Meeting, 4. 2. 2010).

In both cases the participants point out that it is useful working together in the classroom but also point out the extra work that is involved in co-teaching, for

example more time for collective preparation and synchronizing the pace in teaching and the student assessment.

Twice participants referred to visits they had made to their critical friend's classroom. Here is one example:

Dagmar (50+ Citizenship 9):

I and Oddur had a meeting and we visited each other lessons.

Oddur (50+ Chemistry 7):

Yes, I visited Dagmar's lesson and she visited mine. We did this in the same class. ...

Gunnar (50+ Mathematics 7):

Is this is a class you both teach? When two come in and focus on the students in the class then something happens. This is great (Meeting 3. 2. 2011).

Here are two examples of anonymous answers in the evaluation of the Change Room to the question of how the Change Room affected the participants' view of the practice:

Refreshing and rewarding, it is important to get an opportunity for inspirational cross curriculum discussions.

It has increased my understanding of the practice of other staff in the school.

(Meeting, 10. 5. 2011, Participants' evaluation of the Change Room).

Ásmundsdóttir (2012) came to the conclusion in her study of the action research group that the meetings increased the participants' understanding of each other teaching and that it was a place of collaboration.

One anonymous participant said in an interview:

My understanding of different teaching methods in the natural sciences and languages and so forth, enables me to think about the possibilities of transferring this, it opens up paths between people (Ásmundsdóttir, 2012, p. 56).

These answers indicate the participants' consciousness of the Change Room enhancing their positive attitudes towards cross curriculum collaboration.

Collaborative analysis of tensions

Perhaps the most influential learning process in the Change Room was when participants described and discussed the tensions they experienced in the classroom. According to the theory of expansive learning we need to understand the contradictions within the activity system in order to transform the activity system. Engeström and Sannino (2010, p. 5) describe contradictions as “the driving force of transformation”. Roth and Lee (2007) also emphasise this role of contradictions in change and point out that the subjects in the activity system must become aware of the contradictions:

Contradictions, when they are brought to the level of consciousness, engender homeostatic processes within activity systems, which thereby change and develop over (historical) time (Roth & Lee, 2007, p. 204).

We can not examine the contradictions directly but we can observe them through their manifestations as tensions or conflicts in individual experiences, actions or interactions within the activity system (Virkkunen & Newnham, 2013). The tensions are viewed as a sign of need for change, and as a constructive mechanism for change since by addressing these tensions the resolutions may contribute to development of classroom practice. Therefore we need to understand the tensions that call for changes in the practice in order to understand what changes we need to make in the classroom practice.

The tensions participants in the Change Room experienced when looking at main changes from past to present in the activity system of Sjárvarsíðuskólinn were described in section 10. 2. The tensions participants experienced in the activity

system of the classroom in the present were described in section 11.3, and an overview of the tensions the participants described in relation to their action research projects was provided in section 11.2.

To summarise again then there are three main tensions most influential on teachers experience in the activity system of the classroom in the present. Firstly a tension between the tools teachers use and the object of learning; the students as passive or active learners, secondly between the teachers and the tools; use of one or two way communication between the teachers and the students and thirdly between the teachers and the rules; material coverage or deep learning. Two of these tensions also appeared clearly in the discussions about the changes from the past to the present in the school as a whole that is between one and two way communication and between material coverage and deep learning.

There were some indications that the participants were becoming conscious about the importance of identifying the tensions in their practice.

Sandra (40+ History 20) speculated:

Are the tensions not important and necessary according to Engeström? We need to recognise tensions; otherwise there will be no changes.

Hafþór (Outside consultant) agreed and added:

Contradictions will always be present, they are not to disappear, we solve one and then another one appears (Meeting, 6. 10. 2010).

At the follow up meeting in the autumn 2011 we discussed the usefulness of the visualisation of the action research projects in the activity system of the classroom and then Nanna (50+ Biology) remarked that pointing out the tensions helped her understand better her own teaching situation.

Nanna explained:

I think this is an instrument for analysis. One is performing

something and you can think: Yes, I am doing this and there is tension here. I am fighting the curriculum or trying to cover the material or something like that. This puts it on paper. I am always fighting this because of the tension between these two factors. I think this helps me to analyse myself (Follow up meeting, 1. 9. 2011).

Following are two examples of anonymous answers in the evaluation of the Change Room to the question of how the Change Room affected the participants' view of the practice. These answers indicate the importance of the discussions about tensions in the practice:

Not much, but the discussion on tensions has been interesting.

I understand better tensions in the teacher's job and how outside factors influence the school.

(Meeting, 10. 5. 2011, Participants' evaluation of the Change Room).

Transformation

Individual teachers began to transform their practice in the Change Room. The teachers are making changes and the emphasis in the classroom is shifting from teaching to learning. The teachers are enhancing students' active learning and listening to students' voices. They have taken the first step towards creating their situated pedagogy of active student learning informed by attention to student voice. (This was described in sections 11.2 and 11. 4.).

To summarise, the teachers are learning how to increase the students' responsibility for learning for example by introducing cooperative learning, increasing students' feeling of ownership of their studies, students boundaries crossing and giving them various opportunities to influence the learning process i.e. choosing learning material, choosing assignments, presenting their projects, taking active part in both assessment and evaluation of the teaching and learning.

The new learning methods have not taken over the teaching time, for example in the first year of study in biology where teachers introduced CLIM, cooperative learning assignments, it took up half of the semester time and traditional teaching methods half the time (Hrólfssdóttir & Víkingssdóttir, 2012). The new view towards learning as a participation is gaining ground in the action research group but the traditional view to learning as an acquisition of knowledge and teaching as a transmission of knowledge has still its firm place. It is likely that these two views to learning or “metaphors for learning” will coexist as different rather than incompatible perspectives and hopefully we will be able to use to our advantage the positive aspects of both of these perspectives in our school (Sfard, 1997).

It should also be noted that the changes that have taken place are not limited to changes in teaching and learning methods but just as importantly changes in attitudes towards the object, the students’ learning and towards the actors behind the learning i.e. the students themselves. One participant shows that he is aware of this change in attitude towards the students:

I am much more conscious and more willing to react and even change completely, my attitude has changed so teaching has become a more relaxed job done in cooperation with the students (Meeting, 10. 5. 2011, Participants’ evaluation of the Change Room).

Ásmundsdóttir (2012) research on the action research group in Sjárvarsíðuskólinn revealed that the teachers themselves conclude that they have made changes in their classroom practice. This appears, she explains both in the interviews with individual teachers and in the focus group she conducted. Here are two examples of individual comments about changes in their practice:

Everybody in this group are making changes in their practice, action research revolves around changes, to make a change in order to improve and everybody does it on their own premises.

...

The research is focused on the application of new methods so the students become more active. ... We are all finding ways, better ways ... I am trying out something new and the purpose? The purpose is to enhance students' learning so they become better in this and that (Ásmundsdóttir, 2012, p. 63).

The ultimate aim of expansive learning is transformation of practice at a system level. In the Change Room we did not reach the stage of changes at system level i.e. stage 7 in the expansive learning cycle but we saw changes at individual teacher level and some of them had great potential to become changes at departmental level and institutional level as will be discussed later in the thesis. One should keep in mind that transformation of practice takes a long time (Fullan, 2007; Hodkinson, et al., 2008; Virkkunen & Newnham, 2013). It is likely that the teachers have to go through a number of expansive learning cycles in order to see the transformation of the teaching practice at a system level in Sjárvarsíðuskólinn. Virkkunen and Newnham (2013) point out that still smaller cycles of expansive learning leading to inventions also need to take place at the same time if we are to have a total transformation of an activity system. The interventions made in classroom practice through the individual action research projects in the Change Room can be viewed as such smaller cycles of expansive learning by individuals. I will elaborate on this matter later in the thesis.

Next I will describe and discuss how the participants in the Change Room developed agency to change their classroom practice and how they also developed cross curriculum agency through their participation in the action research group in the Change Room.

12.5 Agency to change

12.5.1 Agency

The concept of agency can both refer to individual capacity to act autonomously and collective capacity at the activity system level to influence events. Somekh described individual agency in relation to action research as “the capability of a self to take actions that will have impact on a social situation” (Somekh, 2006, p. 15).

Similarly Edwards described individual agency from the activity theoretical view in relation to the person's self or as a holistic individual existence:

Agency, from a SCRAT [Sociocultural Research and Activity Theory] perspective, is synonymous with a person's way of being, seeing and responding in the world. It is an embedded and interpreting agency that draws on its funds of knowledge to both interpret and respond to the environment (Edwards, 2000, p. 200).

Edwards (2007) also put forward the concept "relational agency" that connects together the individual and social aspect of human agency. It is a reaction to the growing need for increased horizontal collaboration between different professionals in the social services and education.

In brief, the concept [relational agency] is intended to align one's thoughts and actions with those of others to interpret aspects of one's world and to act on and respond to those interpretations (Edwards, 2007, p. 4).

It involves the practitioners' capacity to recognise their own limitations and to be able and willing to seek collaboration with other professionals when needed and work with them on a shared object of activity.

In the expansive learning cycle the aim is the formation of agency to transform practice (Virkkunen & Newnham, 2013). The method of double stimulation enhances both the learning process and the agency building. In the double stimulation the first stimulus or surface is the "mirror" where there is data about problems at the workplace and the second stimulus or surface is the "model" where the conceptual framework of the activity system is. In between is the third surface "ideas" where new ideas are created and tested. Engeström describes this as a liberating process:

the formation of new solutions, concepts, and skills in double stimulation is much more than just a cognitive learning achievement. It is a liberating achievement of agency formation,

which gives expansive personal and collective meaning to the associated cognitive and cultural learning contents (Engeström, 2007b, p. 374).

In the Change Room the method of double stimulation was used with three stimuli or surfaces and the conceptual framework of the activity system used as the “model” or a second stimulus or surface. But the difference between the Change Laboratory and the Change Room was that the data in the “mirror”, the first stimuli in the Change Room was not collected by an outside researcher as in the Change Laboratory but there we used instead data from the participants’ action research projects. In addition the group did not find collectively an idea or tool to change practice in the third surface “idea” but instead the individual participants in the Change Room decided on their own new idea to try out in their classroom practice.

Agency to change practice can be viewed both as an individual capacity to change classroom practice and as a collective capacity to change practice at a system level. The collective agency is called transformative agency (Engeström, Sannino, & Virkkunen, 2014). Virkkunen (2006) explains transformative agency in the following way:

Agency here means breaking away from the given frame of action and taking the initiative to transform it. ... People develop and use external artifacts to reach a redefinition of the situation and to control their own actions. They do so, however, not as isolated individuals but as members of a community. A number of individuals can collaboratively develop and use shared artifact to enable them to redefine their situation and to master their joint actions in transforming the context of their daily work (Virkkunen, 2006, p. 49).

Relational agency and transformative agency are both collective but the former involves a recognition that a group of different professional can accomplish something by working together where as the latter is the recognition of how a group can change practice by using shared artefacts or tools.

In the Change Room we see the combination of individual agency to change practice and collective agency to transform practice. The action research group in the Change Room was the community that enhanced both the participants' collective and individual agency to change and transform classroom practice. In the Change Room the aim is that individuals begin to change their classroom practice and then it develops into transformative agency to change practice at activity system level, at subject departmental level and then the school as a whole. Agency to change practice and transformative agency was perhaps the most important outcome for the participants in the Change Room. That is also the case in Change Laboratories in general as that is the ultimate aim of the expansive learning process (Engeström & Sannino, 2010).

Engeström (2011) identified five main forms of participants agency directly related to Change Laboratories. Further research by Engeström and his co-workers, Haapasaari, Kerosuo and Vänninen support this idea of different forms of agency formation (Virkkunen & Newnham, 2013). Further analysis has led to the addition of one more type of transformative agency i.e. the second form, criticizing the activity.

The main forms of transformative agency are the following:

- 1) *Resisting* the proposed change, or suggestions or initiative associated with it.
- 2) *Criticizing* the current activity and organization.
- 3) *Explicating* new possibilities or potentials in the activity, often relating to past positive experiences.
- 4) *Envisioning* new patterns or models of the activity.
- 5) *Committing* to taking concrete actions to change the activity, often formulated as commissive speech acts tied to specific time and place.
- 6) *Taking consequential actions* or reporting having taken consequential actions to change the activity.

(Engeström, et al., 2014, p. 125)

Most of the participants in the Change Room were aware of the positive influence of the action research and expressed that view in the pair interviews, small group conversations, and whole group discussions at the meetings in the Change Room. The participants also expressed positive views of participating in the Change Room in the evaluation of the Change Room described above in section 12.1. However it is difficult to differentiate between the influence of the action research that the participants have taken part in since 2005 and the Change Room as such.

I recognised three steps or stages of transformative agency to change classroom practice by the participants in the Change Room. Firstly, diagnosing a need for change, secondly, contemplating change and thirdly, explaining change. Diagnosing a need for change is similar to the second type of transformative agency, identified by Engeström and co-workers, described above i.e. “Criticizing the current activity and organisation”. Contemplating change is similar to a combination of the fourth and fifth types of transformative agency; “Envisioning new patterns or models of the activity” and “Committing to taking concrete actions to change the activity”. Explaining change is similar to the sixth type of transformative agency, as classified by Engeström; “Taking consequential actions or reporting having taken consequential actions to change the activity”.

The first form of agency identified by Engeström “resisting” was not identified in the Change Room. There was no “resisting” to the changes made in practice because of the participant’s ownership of the changes in the Change Room. The changes were all on individual basis, the ideas, the decisions if, when and where to carry them out and the interventions. The “resisting” is removed because in the Change Room there is not this collective stage of deciding what changes to make in practice as in the Change Laboratory. It was not until after the individuals had made their changes in practice through their action research projects that we identified their shared focus on active learning and listening to students’ voices developing into a situated pedagogy of active student learning. Although I could identify a resistance to the “model”, the activity theory, especially in the beginning of the Change Room as was described in section 9.3 and section 12.3.2.

The three steps of formation of agency to change of participants, I identified in the Change Room, are discussed below i.e. diagnosing a need for change, contemplating change and explaining change.

12.5.2 Participants' agency to change

Diagnosing a need for change

When the participants recognized a tension in classroom practice they were in fact identifying a need for change in the practice. This agency is directly linked to the modality of collective learning from collaborative analysis of tensions at the meetings in the Change Room discussed in the section 12.4.2.

Edwards (2008) describes analysis of personal tensions and system contradictions as an interwoven part of the process of making changes to practice from the perspective of the Activity theory:

CHAT [Cultural Historical Activity Theory] demands that we also examine the individual conflict and systematic contradictions that arise. It demands, for example that examining conflict and contradictions is part of the process of creating new practices and repositioning ourselves within them (Edwards, 2008, p. 378).

An overview of the tensions identified by the participants in the Change Room in their individual action research projects was given in section 11.2, Table 11-2, the main tensions in the classroom were discussed in section 11.3 and the collective learning of participants through conversation about the tensions was discussed in section 12.4.2. The need to change practice arose most often because the teachers identified a tension that needed to be solved between the object of learning and the tools i.e. between active and passive learning or the need for more students' participation and involvement in their learning process.

The following remarks were made by participants in small group discussions about the classroom practice in the Change Room and they all indicate a need for change to increase students' active learning in the classroom.

Gunnar (50+ Mathematics 7) and Magnús (60+ Physics 8) were both experiencing that the students were not taking active part in the learning process and some becoming disruptive in the classroom.

Gunnar said early in the discussions:

...to activate students' more in their learning, I think they are often too passive.

And shortly Magnús declared:

What I don't do enough of is that I don't employ the students enough as performers.

And later Gunnar described his feelings:

I feel that the greatest tension in the school practice as it appears in my teaching is that the students are somehow not arriving in the area in order to learn. ... And I feel hurt as a teacher when it is difficult to get peace in the classroom, to be able to do my work (Meeting, 10. 05. 2010. Small group discussion).

Anna (20+ Biology 1) and Ingunn (50+ School-leader 24) directed the attention to changes they wanted to see in students' behaviour.

Anna described:

I think I would like them [the students] to take more responsibility for their learning. Just to bring the handouts back into the lessons, have the learning material with them in school and take normal care of their portfolio.

Ingunn said:

The problem is somehow to reach out to them [the students] and to utilize the power of those who are at full speed in learning and somehow to get the others to join them.... It is of course our role to get them to participate. It doesn't always work but I want to see

more of activation of the students and that they want to come because it doesn't pay off, not to attend class (Meeting, 10. 05. 2010. Small group discussion).

From these examples we can see that participants recognise a problem and a need for change but they did not put forward a concrete solution to solve the problem although the direction is set on students' active learning. But in many instances the participants' recognition of a problem and a need for change led to the development of new ideas of changes in classroom practice in order to try to solve the tension and then individuals developed agency to contemplate or explain changes in their practice which I will now discuss.

Contemplating change

When the participants describe a change in classroom practice that they have planned to make in the near future they envision an intervention of a new mode of practice. This type of agency can be seen from all the introductions of the action research projects participants made at the meetings in the Change Room. (See overview of the action research individual projects in Tables 11-2, 11-3 and 11-4 in section 11.2.1). All the participants introduced, at the meetings in the Change Room, at least one action research project or an idea of a change they had planned in their practice. More ideas were also introduced in the discussions at the meetings through transferability of research i.e. when participants related or transferred the idea that was being presented to their own teaching by describing how they had done something similar or would like to carry out. Some action research projects were only introduced in the Change Room, i.e. the idea of planned changes in practice was described but the outcome of the action research project were not presented there. Here are four examples of introductions of planned changes.

Finnur (30+ English 2) was planning to make certain changes in the spring semester 2011 in teaching students in their third study year English literature.

Finnur described:

I would like to connect the literature with things outside the book itself, in order to awaken them [the students] and make them more active in their learning. Change the conversations so it will be more on equal grounds. I will become a part of the group rather than me delivering or me in a power position. We will be sitting on “conversation grounds” and have discussions (Meeting, 6. 10. 2010).

Telma (50+ Students’ counsellor 12) introduced her planned action research project in an optional course on Learning methods for students who have been diagnosed with dyslexia and dyscalculia. Telma was encouraging the students to examine their own learning methods and learning habits.

Telma explained:

I am teaching them and they are teaching me. I am teaching learning methods to students with dyslexia and it is a great learning experience for me to work with them. We were creating a list with wishes to teachers. There is still reluctance by some teachers to put notes on the intra net but they [students with dyslexia] are finding it very difficult to write down notes. This is on the wish list to teachers but some teachers only want to put notes on the intra net just before the exams. But that is not convenient for this group, they are just coping. It is very interesting and informative to work with them (Meeting, 3. 2. 2011).

Dagmar (50+ Citizenship 9) introduced her planned action research project i.e. her participation in an international collaborative project, the Partnership for Education and Research about Responsible Living (PERL). The aim was to create learning and teaching material for a sustainable future with emphasis on students’ active learning. The project was sponsored by the European Union and the United Nations. Dagmar was working in a group creating learning material on sustainability for teachers and students in secondary schools with emphasis on

active students' assignments and she would be trying out part of the material in her own classes (Meeting, 6. 10. 2010).

Sandra (40+ History 20) introduced her planned action research project for the school year 2010 - 2011, a European collaborative project of teachers in History to create the website "Historiana.eu". The project was organised by EUROCLIO with support from the Lifelong Learning Program of the European Union. Sandra was working on a theme called rights and responsibilities and was creating teaching material on the history of women's' rights. The material should be partly interactive to enhance students learning activity.

Sandra said:

I have sent in some material and hope to get feedback soon so I can continue the work and look at ideas about methods and how students can work with this material (Meeting, 3. 2. 2011).

These four examples above of participants contemplating agency to change practice are all in line with the main emphasis of teachers' action research projects in the Change Room i.e. of enhancing active students' learning or increasing students' participation in the learning process in the activity system of classroom practice.

Explaining change

When the participants presented their action research projects they explained what actions they had taken in order to change their classroom practice. Eighteen of the participants gave presentations of their action research projects in the Change Room, see overviews in Tables 11-2, 11-3 and 11-4 in section 11.2. Their main emphasis was to introduce new tools in order to enhance students' active learning in the classroom and to listen to students' voices, see description in section 11.4.

Many of the participants showed that they were aware of the influence of the Change Room and especially the action research on their work. Eleven of the participants discussed in the pair interviews the past influence of action research on them and in the evaluation of the Change Room, 10 out of 11 found action research very important for their professional development and 8 out of 11 found it

very influential on changing their practice (Meeting, 10. 5. 2011, Participants' evaluation of the Change Room).

Some participants described themselves as change agents and described the changes they had made in classroom practice in general terms.

Rakel (40+ Icelandic 4) states:

I have become much more secure and I think that action research has had these effects. I could believe that it [action research] has doubled or tripled my experience during my first year in teaching. I have become more secure in trying out various new methods, doing almost whatever comes into my mind. I have gained a lot from the job and I hope it has been returned to the students (Pair interview about the Past 9. 12. 2009).

Oddur (50+ Chemistry 7) describes:

I have changed and mainly because of the work around the action research. I have become smoother, if one can say so. I have become more open; I come from the natural sciences where exams were the assessment method. I have become more student centred and more open for more types of assessment methods and today I consider continuous assessment very sensible (Pair interview about the Past 9. 12. 2009).

Mist (50+ Icelandic 22) explained:

I have sometimes called action research the third eye in my job. The eye that keeps me constantly aware of what I am doing, why I am doing it and when I need to change my methods (Meeting, 9. 3. 2011. Presentation in Sjávarsíðuskólinn).

Mist has taken an active part in the action research group since 2005 when it started in the school. She described the influence of the action research on her work as a teacher as follows:

Mist explained:

The ideology behind action research suits me in my work as a teacher because it gives me a freedom to choose what I want to focus on from time to time and a freedom to change my focus if necessary. It has reminded me of collecting all kind of sources from the work of students, so that they can give me an important knowledge to reflect on in my work with them (Presentation at Sjárvarsíðuskólinn, 9. 3. 2011).

Mist also discussed her reflections as an aspect of her action research

It [action research] has given me a lot of inspiration and courage in my work with students and a lot of positive experience through the years and the extra work is worth it because it has given me a very useful tool to reflect on my teaching. ...

My reflections on my work with students has made me more aware of my strength as a teacher and also uncovered my weaknesses. In my private diary my weaknesses are very clear. I take the job to seriously, I am too often disappointed, I am too often writing about what doesn't work, instead of focusing on what really works! But as you can see from these examples my action research has become a creative process both for myself and my students. And the first steps I took have now become an inevitable part of my work with my students in various contexts and I am still searching for new experiences (Presentation at Sjárvarsíðuskólinn, 9. 3. 2011).

These teachers see themselves as change agents of active student learning. They see it as an ordinary part of their teaching practice to try out new methods in their practice.

I also identified in the Change Room the development of a different type of agency to change practice i.e. cross curriculum agency. This is related to the meetings of the action research group where teachers from various subject departments

discuss their practice and the collective modality of learning, professional knotworking.

12.5.3 Cross curriculum agency

Participation in the Change Room and action research in general has enhanced teachers' cross curriculum understanding and an interest in cross curriculum professional collaboration. It has led to the development of cross curriculum agency of participants in the action research group.

Cross curriculum agency is the will and capacity to work with others to change the object of teaching and learning. The teachers' collaboration involves trying to change the object by working with the ideas and tools different teachers brings from different subjects and recognise and negotiate the use of that resources in order to be able to work together on the object or a certain tool used for the object. It is similar to what Edwards (2007) calls relational agency between professionals described at the beginning of section 12.5.

Cross curriculum agency is directly linked to the modality of collaborative learning of knotworking and collaboration of school practitioners in general, see description and examples of participants' collaborative projects in section 12.4 above and an overview in Table 12-2. Perhaps the best example of participants' cross curriculum agency is their collaboration at the meetings in the Change Room. There participants experience conversations about classroom practice in different school subjects, they share their ideas, their problems and their action research projects. The participants experience it as invitations to different classrooms and their understanding of similarities and differences between the subjects is increased and that provides opportunities for their cross curriculum collaboration.

The participant in the Change Room who took the largest step towards cross curriculum collaboration were Bjarki (60+ Danish 23) and Sandra (40+ History 20). They taught together an optional course on Christian IV (king of Denmark and Iceland) that evolved around students' project work and a study visit to Denmark. This optional course was the response to their experience of tension between passive and active student learning and a tension between coverage and depth in

learning material. It was also an attempt to create a new course developed around students assignment related learning in the spirit of the new school's curriculum (Meeting, 15. 4. 2010; Kristjánsdóttir & Rasmussen, 2011). This optional course became a model or a prototype for other new optional courses created in the school in the coming years involving teachers' cross curriculum collaboration connecting history and foreign language (French, German, Italian and English) (Thorgeirsdóttir, 2011b).

In the Change Room there were also examples of shorter cross curriculum collaboration projects. One example is when Finnur (30+ English 2) and a teacher in Sociology introduced a cross curriculum collaboration between English and Sociology where students' assignment was assessed in both subjects.

Finnur described:

There is one thing about the value of assignments. We did a mass media assignment, cross curriculum in English and Sociology. The students created a news report in English. These were collected together into a paper and published for the class. Then each student got a copy of the paper and it gives it a whole new purpose. The teacher is not only criticising, it is also the peers (Meeting, 15. 4. 2010).

12.5.4 The process from diagnosing a need to explaining change

In this and in former chapters as well as in Appendix 12 I have described various changes that the participants in the Change Room reported having contemplated or explained in their classroom practice. But how do the individuals move from having agency to identify a need for change in classroom practice towards having agency to contemplate and explain change i.e. envision, plan and carry out changes in their classroom practice? That development from recognising a need for change towards being able to execute it into an action of change in practice occurs through modalities of individual and collective learning described in section 12. 4 that are involved in the expansive learning cycle in the Change Room. To understand that process better as an holistic process that connects individual and

collective experience, two concepts applied by Sannino (2008) are useful i.e. “personal sense” from Leont’ev (1978) and “experiencing” from Vasilyuk (1988, as cited in Sannino, 2008; and Sannino, 2010).

Through the discussion process at the meetings in the Change Room the participants developed their “personal sense” that enabled them to connect meaningfully their own understanding of the motives in work and the object of the activity with their own reality and values (Sannino, 2008). Leont’ev describes this process:

Scientific psychology knows this process only in partial expression: in the phenomena of “rationalization” by people of their actual motives, in experiencing the torment of transition from the thought to the word (L.S. Vygotskii quotes Tyutchev: “I forgot the word which I wanted to say, and the thought, lacking material form, will return to the chamber of shadows”) (Leont’ev, 1978, p. 93).

What is really important is the process of converting thoughts into expressions as the participants did in their presentations, interviews and conversations at the meetings in the Change Room. The methodological process or the tools used in the Change Room helped the participants to develop their personal sense of the object, the learning of the students. Sannino describes the process as follows:

Participants who reconceptualise the object of their work in Change Laboratories see the object through the perspective of their own motives, that is in the perspective of personal sense. The development of a personal sense is a critical achievement that allows participants in Change Laboratories to envision and implement change in their work. The methodological procedure of the intervention, the use of artefacts such as the three sets of surfaces [“mirror”, “model” and “ideas”], and the discussions within the Change Laboratory mediate the process through which participants elaborate their personal sense of the object (Sannino, 2008, p. 239).

Part of the process of developing a personal sense is to realise and put into words the tensions the practitioners are facing in their practice. The process when an individual tries to solve these tensions with the help of others or in Sannino's words "is engaged in a quest to overcome critical situations" (Sannino, 2008, p. 240) is called "experiencing" by Vasilyuk. According to Sannino "experiencing" is the link between words and actions i.e. the process that connects together the discussions at meetings on possibilities to make changes in practice and the actual actions to carry out the changes in practice. The factors influencing the process of experiencing according to Vasilyuk are the individuals' values, pleasure, reality and creation (Sannino, 2008). There the personal agency of each individual is influential, their social roles, age, sex, class and their thoughts, values and personal history. It all forms the basis for the practitioners' professional theory that individuals create when the factors Vasilyuk lists are connected together with the personal agency into the practitioner's subjective and personal theory about the practice.

Sannino (2008) describes "agentive talk" at the meetings in Change Laboratories as especially important for the process of "experiencing". "Agentive talk" is talk that is directly related to the participant's actions. Two types of "agentive talk" are influential for expansive learning i.e. firstly, talk where participants describe their commitment to change in practice and secondly talk that involves descriptions of previous concrete experiences in practice (Sannino, 2008). I consider this was happening in the Change Room when participants introduced and presented their action research projects and in the group discussions on tensions in practice at the meetings in the Change Room. The different modalities of learning both individual and collective connect together in the processes of developing personal sense and of experiencing' and they enhance the individual's agency to change practice and collective agency to transform practice.

I have now presented the findings of the Change Room, i.e. the main changes from the past to the present in Sjárvarsíðuskólinn, the individual action research projects and the action research group in the Change Room. Transformation of the activity system was the aim of the Change Room and that was reached through combining

the individuals' agency to change their practice and the collective transformative agency of the group. I have also discussed the findings and connected to useful concepts that can be developed further in classroom practice in Sjárvarsíðuskólinn.

I will now in the final part discuss the findings and the study further and that part is divided into five chapters. Firstly, I will evaluate the changes at individual and group level and give answers to my research questions. Secondly, I will discuss the tensions involved in doing an insider action research. Thirdly, I will convey on how some things could have been done differently in the study to guide the way for future Change Rooms. Fourthly, I will describe a few examples of what has been done after the Change Room that will support my claim that the changes made in classroom practice in the Change Room had potential for changes at system or institutional level. Lastly there are some concluding words.

PART V: DISCUSSION AND CONCLUSION

13. CHANGES AT INDIVIDUAL AND GROUP LEVEL

In the first chapter of the discussion I provide answers to my research questions. The section headings are the three main research questions. The first research question is directed at my action research, the Change Room, where action research and activity theory were connected together in a new way to enhance professional development and changes in classroom practice. I will explain how the methodology of the Change Room differs from traditional Change Laboratories and then describe the main changes made in classroom practice in the Change Room and discuss how the Change Room supported the changes. The second research question is directed at my case study of the influence of action research on the participants in the Change Room. I link together the many different metaphors and modalities of participants' learning involved in the Change Room. The third question concerning how the work of the action research group can be improved is both related to my action research and the case study and reflects the aim of the study of enhancing practitioners' professional development and building of a learning community in Sjárvarsíðuskólinn. I provide concrete suggestions about how the work of the action research group can be improved and I also discuss possibilities of future use of the Change Room. My answer to the third research question is first and foremost based on the empirical findings of the study directly related to this question but also on my professional judgement built on the literature and all the findings of this study.

13.1 How can “the Change Laboratory” be used productively with action research to enhance professional development?

Action research and activity theory were used productively together in this study, both by me as a researcher and my colleagues who took part in the study as is described and discussed in sections 9.3, 12.1, and 12.3.2. The Change Room was created in this study, an altered version of Engeström's Change Laboratory. The Change Room is a new model for teachers' professional development to enhance sustainable changes in classroom practice. The Change Room provides a new interventionist methodology to connect action research and activity theory together.

In reviewing the literature I identified a gap in knowledge relating to the possibility of finding a methodological way to combine action research and activity theory. Darwin (2011) also identified this gap in knowledge and acknowledged as is done in this research that the analysis of tensions and contradictions in the workplace activity could enhance the outcome of action research. Darwin suggested that activity theory could be integrated into an action research cycle although he did not report on a study that had tried this out (Darwin, 2011). Other studies have connected action research and activity theory together as was described in section 5.5, but not in the same way as is done in this research. In most cases an outside researcher used the conceptual framework of activity theory to meta-analyse the findings of practitioners' action research (Edwards, 2000; Ellis, 2011; Feldman & Weiss, 2010; Postholm, 2009, 2011b; Wells, 2011). In few studies the researcher encouraged the practitioners themselves, in multi-professional collaborative studies, to use the conceptual framework of the activity system to analyse their findings (Hooker, 2009; Leadbetter, 2008; Pearson & Somekh, 2006; Stuart, 2014). The way that the Change Room differs from these studies lies in the methodology and how the expansive learning cycle and the action research cycle are connected together.

As described in chapter 9 the Change Room was conducted in Sjárvarsíðuskólinn during two school-years from 2009 - 2011 with an action research group of 18 teachers, a student counsellor, two school-leaders and an outside consultant from the University of Iceland. A total of nineteen group meetings were held in the Change Room and one follow up meeting where the findings of the Change Room were presented and discussed. In the Change Room the participants went together through an expansive learning cycle where a double stimulation drives the learning process. There are three sets of surfaces in the Change Room i.e. "mirror", "model" and "ideas" (Engeström, 2007b), described in sections 5.3 and 9.3. The participants' introductions and presentations of their action research projects, interviews and discussions at the meetings were used as material in the "mirror" serving as the first stimulus in the learning process. The conceptual framework of the activity theory, the focus on tensions and the use of the triangular model of the activity system of the classroom to visualise individual action research projects was

used as material in the surface “model” serving as a second stimulus in the expansive learning cycle. All the ideas put forward in the participants’ action research projects were used in the surface “ideas” to see what changes were being made in classroom practice and where the changes were leading.

The participants’ understanding of the problems and potentials in classroom practice was increased by looking at the history of Sjárvarsíðuskólinn, including the main differences between the past and the present and the tensions experienced by the participants in connection to these changes. The historical analysis was important because the understanding of the past enhanced the understanding of the present situation. Understanding is the first step towards changing practice as Carr and Kemmis have pointed out: “Practices are changed by changing the ways in which they are understood” (Carr & Kemmis, 1986, p. 91). The interviews and discussions about the changes from the past to present revealed tensions in classroom practice and helped the participants to focus on what changes were most needed and wanted in order to solve these tensions. Two of the three main tensions in classroom practice at present were first identified as tensions in Sjárvarsíðuskólinn in relation to the changes from the past to the present. The focus on the object within the activity system of Sjárvarsíðuskólinn, the students’ learning, helped the participants to make a reconceptualisation from teaching to learning that is a shift from the focus on the responsibility of the teacher to provide instruction towards the focus on the responsibility of the learner to learn. The responsibility of the teacher then becomes to provide learning opportunities for students to construct new meaning and understanding through the learning process.

In Table 13-1 below a comparison is made between Engeström’s traditional Change Laboratories (CL) and the Change Room (CR). What they have in common is the unit of analysis being the activity system, activity theory the theoretical ground, tensions and contradictions drive the transformation process and the method of double stimulation is used in the expansive learning cycle with the conceptual framework of the activity system used as a second stimulus. The main departure of the Change Room from Engeström’s traditional Change

Laboratory is that the expansive learning cycle and the action research cycle are combined together in the Change Room. The data in the “mirror” used as first stimulus, i.e. information about tensions experienced in classroom practice and changes made in classroom practice were not gathered and presented at meetings by an outside researcher in the Change Room but by the participants themselves through their action research. The second main departure from traditional Change Laboratories is that the proposed solutions to solve the tensions experienced in classroom practice were not planned at system level and carried out by the whole group together but on individual level through the action research projects of the participants. In the background was the collective aim of increasing the students’ responsibility for their learning but each individual teacher decided what changes he or she wanted to make in classroom practice to try to reach that aim. It was not until late in the process (and indeed afterwards) that we saw what the projects had in common and where the changes in classroom practice were heading. This is to emphasise the teachers ownership of the changes made in classroom practice as former studies have shown this to be very important as changes in classroom practice begin in the classroom itself and need therefore to be initiated by individual teachers although influenced by collaboration with others (Fullan, 2007; Hargreaves & Fullan, 2012; Holly, 1991; Smeets & Ponte, 2009; Zeichner, 2003). In schools autonomous teachers work alone in their classrooms where changes need to be initiated on individual basis whereas in other occupations a collective change is often needed in order to coordinate the service of multi-professionals as for example in the health and social services. For example in the CL in the home care for the elderly in Finland (Engeström, 2010; Engeström, et al., 2012) and in the CL in a hospital surgery in Finland (Engeström, 2011; Virkkunen & Newnham, 2013) a change on system level was negotiated within the CL. Furthermore in the CL in the surgery the managers and practitioners were working together so this was a combination of a top down and a bottom up change in practice that was negotiated in the CL whereas in the Change Room we saw only bottom up changes by the teachers although the school’s policy and central curriculum had influence on the decisions made by the practitioners. In the CL in the home care of the elderly the researchers were integrating the outcome of two CLs, or anchoring

up and down between two levels, one with managers and one with the workers in the homecare service. In both a system change is negotiated whereas in the Change Room the various ways the teachers changed their practice towards more students' active learning is on individual level. That is a more democratic process than in the traditional CL but a process that takes much longer time and is not negotiated at system level and that perhaps puts limit to the Change Room consolidating change at school system level. In former CL in schools one can find an example of one system change as in a middle school in Finland (Engeström, 2005). In CL in a school in Botswana the teachers created four different solutions to solve the contradiction (Virkkunen & Newnham, 2013). And in a CL in a school in Italy a story is reported of a change in practice made by one teacher in the group and it is not clear if the other teachers made the same change in their assessment practice or found their own solution to the conflict (Sannino, 2010). This supports the claim that the culture of schools calls for teachers being able to create many different solutions to solve tensions in classroom practice. See further descriptions of these former CLs in section 5.3.

Aspect	Same or different	Change Laboratories	Change Room
Unit of analysis	Same	The activity system	The activity system
Theory	Same	Activity theory	Activity theory
Change impetus	Same	Manifestations of contradictions	Manifestations of contradictions
Researchers	Different	Practitioners and outside researchers	Practitioners, an inside researcher and an outside consultant
Methodology	Different	Expansive learning cycle and Ethnography	Expansive learning cycle and action research cycle combined together
Method	Same	Double stimulation	Double stimulation
First stimulus	Different	Outside researchers collect data and present it at meetings	Participants select data through their action research projects and present these at meetings
Second stimulus	Same	The conceptual framework of the activity system	The conceptual framework of the activity system
Duration	Different	2 - 12 months	2 school-years
Change initiation	Different	Can be both or either, top down and/or bottom up	Bottom up
Level of change	Different	One change in practice at system level negotiated in the CL	Many changes at individual level that open up a general direction identified late in the CR process or afterwards

Table 13-1 Comparison of traditional Change Laboratories and Change Room

We saw in the Change Room that the shift from teaching to learning involved increased emphasis on students' active learning and on listening to students' voices. The students' responsibility for their learning was increased with their active learning in the classroom and they had more influence on their learning through teachers listening to their voices. One can see from the students' anonymous answers in the teachers' presentations of their action research projects that the students are beginning to develop a language for talking about their learning and about themselves as learners. The teachers no longer only see themselves as providers of knowledge but they also see themselves as facilitators for learning. These changes have called for the creation and implementation of new tools in classroom practice, especially tools for various assignments, creative work, discussions, reflection, presentations and peer group learning. We also saw the first signs of the division of labour beginning to change in the classroom between the teacher and the students. Perhaps it could be described as the first step towards creating "an interactive classroom" (Blanchard, 2008, p. 144) where the teacher's role changes from expert to facilitator and advisor and communication becomes more democratic and more responsive to students preferences than in traditional classrooms. It could also be termed "a participative classroom" as we saw a change from teacher centred towards student-centred classroom practice.

Moving the emphasis from teaching to learning or from teacher-centred instructional strategies towards student-centred instructional strategies is not an isolated phenomenon in Sjárvarsíðuskólinn. It is rather something that the teaching profession has been trying to do for some time now, a trend seen in many places (Baldwin, Keating, & Bachman, 2006). Former studies with action research groups have shown similar results i.e. emphasis on the students as active learners (Savoie-Zajc & Descamps-Bednarz, 2007) and have also shown the importance of listening to students' voices in order to increase their active participation in their learning process (Harrington, Gillam, Andrews, & Day, 2006; Zeichner, 2003). Somekh who has been doing action research since 1978 came to a similar conclusion in the process of reconsidering her role as a teacher:

I came to realize that learning is closely related to a sense of personal efficacy and that children needed to be freed of my authority and given autonomy and encouraged to take responsibility for their learning (Somekh, 2006, p. 4).

What the study in the Change Room adds to earlier studies is that it shows that this development of increasing students responsibility for their learning through active learning and listening to students voices works in a new context i.e. the context of the educational system in Iceland. Furthermore it perhaps adds to earlier studies that it shows how these two emphasis of active learning and listening to students' voices can be connected together in a new situated way in teachers' action research projects as when Mist activated the students answers to open questions and their products and used it as teaching material and when Jónas in his project activated an idea from a student and created the alpha - beta- gamma assessment system.

Increased active learning and listening to students' voices can be viewed as increased participative learning or as "legitimate peripheral participation" (Lave & Wenger, 1991). The students control their learning but in the Change Room we see the teachers beginning to legitimate that control. The teachers still keep control over all significant aspects of classroom practice and set clear limits to students legitimate control over their learning as they decide in each case which aspects of their learning the students control, whether it is the choice of subject in a project work, a way to present the findings of an assignment, to work alone or not or with whom to work with. The students are becoming more "legitimate" in the sense that they feel they have more agency in the classroom with increased influence on their learning and "peripheral" in the sense of inclusive as taking a more active role in the classroom. Some of the teachers in the Change Room focused in their action research projects on increasing the levels of participation of all the students as is described in sections 11.4.1, 11.5.1 and 11.5.2. For example Rakel involved all the students in giving assignment feedback to the class when learning expression in Icelandic, Nanna with all the students having special roles in cooperative learning assignments in Biology and Bjarki and Sandra with all the students working on and

presenting project work in a cross curriculum optional course in Danish and History. In these examples the students also had a great influence on their learning process for example by their own choice of subject for the project work, their own creation of poems for expressing themselves and choice of creative method to present cooperative learning assignments. It can be argued that in these cases the students are moving beyond peripheral participation towards full membership of the classroom facilitated by the new objects for classroom activity as they are taking an active part and having direct influence on their learning process.

It was not surprising to find the theme of active learning appearing as the outcome of the Change Room as that is embedded in the aim of increasing the students' responsibility for their learning. Active learning can be viewed as the germ cell of the Change Room. The germ cell is the smallest unit and carries the basic tension or manifestation of contradiction within a certain whole and it can open up multiple ways for future developments (Engeström, et al., 2012, p. 289). See further explanation of the germ cell in section 8.4.3. Active learning is at the core of the shift from teaching to learning and all the three main tensions in classroom practice centres on enhancing active student learning. The germ cell of active student learning needs to be developed further in classroom practice through the pedagogy of active student learning.

The second theme of listening to students' voices came as a surprise. The process of increased listening to students' voices can partly be explained as a consequence of the research methods used in the action research projects. The action research cycle calls for evaluation of the changes made in classroom practice and that puts the students in the spotlight. The students are the participants in the teachers' research and therefore it is rational and effective to ask them to evaluate the changes made in classroom practice. Elísabet in Geology felt it gave her information about what was working and also enhanced the spirit in the class, Andrea in Mathematics also valued the students new ideas in their evaluation. Oddur and Katrín not only asked the students to evaluate the new learning portfolio they were developing but also involved the students in the process of structuring the portfolio. Mist took it one step further and used the

students' learning products as teaching material as well as their evaluation of assignments as described in section 11.5.1. Perhaps more importantly the focus on listening to students' voices can also be viewed as a consequence of the increased emphasis on learning and a more student-centred classroom practice when the participants were actively trying to solve the secondary tensions they were facing in the expansive learning cycle that is tensions between one and two way communication, active and passive students' learning and covering the curriculum and deep learning. The expansive learning actions in the Change Room helped the participants to bring the tensions in classroom practice to the surface and confront the tensions through discussions at the meetings in the Change Room. The double stimulation also helped the participants to connect the tensions with their action research projects when their projects were visualised in the activity system of the classroom. There they could connect together data in the "mirror" from their own action research projects with the "model" of the activity system of the classroom which enabled them to recognise the existence of the tensions within their classroom and in line with the principles of the activity theory, to see these constructively as a new overview of their classroom practice and stimulus for change.

Listening to the students' voices was the first step towards changes in the division of labour in the classroom between the teachers and the students. It is likely that more changes are required in the division of labour in the classroom before the transformation towards active learning is complete. The expansive learning cycle in the Change Room is not complete and it is very likely that before we achieve the seventh and final step in the cycle (i.e. to see a complete transformation of the activity system of the classroom in Sjárvarsíðuskólinn), the staff group needs to go through a number of expansive learning cycles. In the Change Room we saw changes at individual and departmental level through reconceptualisation of the object of students' learning. This happened with the shift in emphasis from teaching to learning and the beginning of development of a participatory student centred pedagogy through listening to students' voices and students' active learning that is the germ cell of the Change Room. Full implementation needs more expansive learning actions within the staff group and transformation of practice can

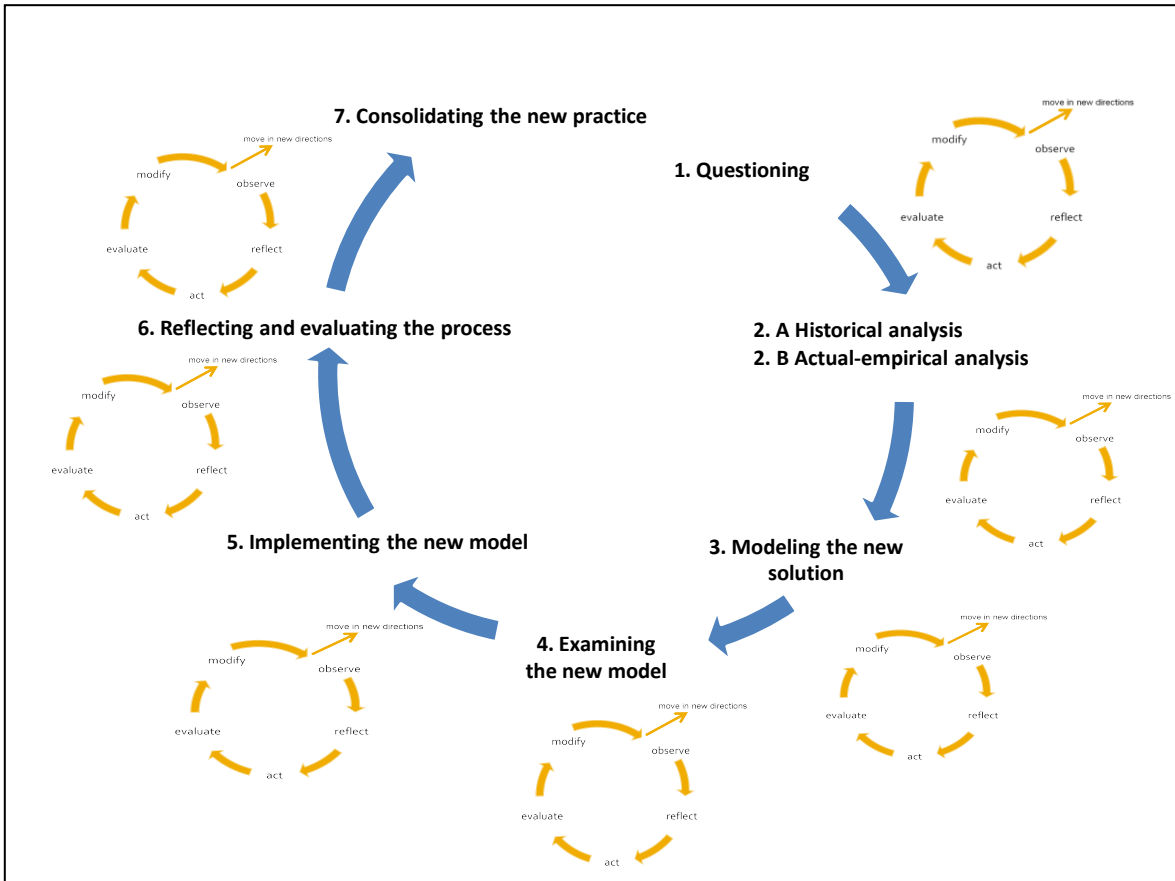
take a long time (Fullan, 2007; Hodkinson, et al., 2008; Virkkunen & Newnham, 2013). We saw actions that can be viewed as the first step towards transformation at a system level emphasising a change in the object to active students' learning.

Expansive learning is manifested primarily as changes in the object of the collective activity. In successful expansive learning, this eventually leads to qualitative transformation of all components of the activity system (Engeström & Sannino, 2010, p. 8).

Virkkunen and Newnham (2013) point out that small cycles of expansive learning leading to innovations also need to take place to transform an activity system. Engeström also discussed these smaller cycles and sees them as miniature innovative cycles:

A large scale expansive cycle of organizational transformation always includes smaller cycles of innovative learning. However, the appearance of small-scale cycles of innovative learning does not in itself guarantee that there is an expansive cycle going on. Miniature and intermediate cycles of innovative learning should thus be regarded as potentially expansive. Smaller cycles may remain isolated events, and the overall cycle of organisational development may become stagnant, regressive, or even fall apart. The occurrence of a full-fledged expansive cycle is not common, and it typically requires long-term effort and deliberate intervention (Engeström, 1999c, p.5).

The interventions made in classroom practice through the individual action research projects in the Change Room can be viewed as such smaller cycles of expansive learning by individuals. These smaller cycles are shown in Figure 13-1 in connection with the larger expansive learning cycle in the Change Room. These changes in practice on an individual level need to be developed further on individual, departmental and school level in order to make the transformation complete at the school system level.



(Adapted from Engeström, 2007b, and from; McNiff & Whitehead, 2006)

Figure 13-1 The expansive learning cycle of the group and smaller individual action research cycles in the Change Room 2009-2011.

Barriers to change at the system level can be identified within the elements of rules, community and division of labour in the activity system of the school. Within the rules the time-table, the grading system and teacher's isolation in the classroom create barriers. Within the community the coordination and standardisation within subject departments creates tertiary tension for teachers who are taking steps in changing their practice from teaching to learning but teacher's isolation in the classroom also creates tertiary tension as some teachers are likely to resist the transformation of the object from teaching to learning. This restricts the collective formation of a new object although with increased "knotworking" and teachers cross curriculum agency, the rule of teachers isolation may be replaced gradually by the rule of teachers collaboration in the classroom. Pearson and Somekh (2006) came to a similar conclusion in a study in primary and

secondary schools in England, i.e. if the new working method of transformative learning with ICT is to become the dominant way in the classroom, organisational changes are needed at system level in schools for example in the timetable, national tests and teachers roles.

The changes participants made in classroom practice in the Change Room towards developing a new pedagogy of active student learning were on an individual level but they have real potential for changes at system or institutional level. The changes that have taken place after the Change Room indicate changes at system level, for example in cross curriculum optional courses and cooperative learning as will be discussed further in chapter 16. The Change Room has enhanced the knowledge on how to combine action research and activity theory in a new way in order to increase the practitioners' agency to change their practice and also to develop cross curriculum agency.

Feldman and Weiss conducted a study where they connected activity theory and teachers' action research together and argued as I do that activity theory "provides a way to expose the contradictions of practice that are both the affordances and constraints to change" (Feldman & Weiss, 2010, p. 53). In their study the change in the teachers' practice was the use of picture to enhance students descriptive writing skills. But for the researchers the important outcome was changes in teachers' professional identity that they saw as necessary for lasting change in classroom practice to take place and call it "a teacher's way of being a teacher" (Feldman & Weiss, 2010, p. 33). This can perhaps be viewed as similar to the outcome of the Change Room of the development of the teachers' agency to change practice and cross curriculum agency that is directly related to the second research question.

The second main research question centres on changes at group level, changes in the action research group as a result of their participation in the Change Room. The modalities of participants' learning and the development of agency to change practice and cross curriculum agency are the processes that encouraged and helped the participants of the Change Room to make the changes in classroom

practice towards more student-centred classrooms with increased active learning and students' influence on their learning.

13.2 How does participation in action research influence the participants?

Perhaps the most important influence of the participants' participation in the action research group in the Change Room is the influence of the learning process that took place there. This was the prerequisite for agency to change and cross curriculum agency that was the most important outcome of the Change Room and enabled the teachers to make the changes in classroom practice described in sections 11.2 and 11.4 and discussed in section 13.1. The modalities of individual learning were described in sections 12.4.1 i.e. affirmation, transferability and creating their own professional theory and the modalities of collective learning were described in section 12.4.2 i.e. knotworking, collaborative analysis of tensions and transformation.

These modalities of learning can be connected to Bateson's different learning levels that were described in section 5.3. Bateson (1972) described "Learning I" level as conditioning and reinforcement, "Learning II" level as learning to learn and on rare occasions revealing "double bind" situations that can lead to "Learning III" level that involves questioning and redefinition of things learned at Learning II level. The modalities of learning of participants in the Change Room can be connected with learning at all these learning levels, Learning I, Learning II and Learning III as defined by Bateson. Regarding modalities of individual learning then affirmation is mostly Learning I when participants are confirming mutual understanding or giving praise i.e. confirming shared aims, meaning, problems or values in the teaching practice or the action research process. Transferability can be either Learning I or Learning II or both. It occurs when participants connect their projects directly to other projects being presented and can serve as reinforcement which would be Learning I. However when transferability involves changes in working methods in the classroom based on an idea presented in another project but developed in a new way, then it is Learning II. When individuals are faced with tensions at Learning II level then it can lead to reconstruction of the person's identity or creation of their own professional theory i.e. Learning III. For example, both Mist

and Gunnar saw change in their professional theory from being providers of knowledge to facilitators of students' learning and Jónas created his own method of individual student assessment, alpha-beta-gamma as described in section 12.4.1. This can be viewed as Learning III because it involved the rethinking of the premises of the rule of same composition of student assessment in the same course and invent a new method to do it on individual bases. Regarding modalities of collective learning in the Change Room then knotworking can be at all three levels of learning. If teachers work together and continue their work as they have done but now side by side instead of apart then the learning is on Learning I level. In many cases knotworking requires reorganisation of work processes though connecting the subjects together in a new way through students' assignments and that is Learning II. An example would be the creation of a new cross curriculum optional course by Bjarki and Sandra where the subjects of Danish and History were connected in students' project work that involves metalearning of the teachers and then learning is at Learning II level. This project led to a system change in the provision of cross-curriculum optional courses that will be described in section 16.1. In exceptional cases knotworking involves transformation of work practices and then the learning would be on Learning III level. Collaborative analysis of tensions in the classroom practice are at Learning II level as through the discussions the participants question the dominant approach to the teaching practice and point out what changes are needed in the practice. The collaborative analysis of tensions opens up possibilities for moving into Learning III. If successful in solving the tensions participants' Learning III may lead to transformation of the practice and we saw first signs of that in the Change Room as the participants were trying out new methods to solve the tensions. The teachers were enhancing students' active learning and listening to students' voices. They have taken the first step towards creating their situated pedagogy of active student learning.

Bateson described the possibilities of outcome of Learning III when efficacious:

The resolution of the contraries may be a collapsing of what was learned at level II. ... For others, more creative, the resolution of contraries reveals a world in which personal identity merges into

all the processes of relationship in some vast ecology or aesthetics of cosmic interaction (Bateson, 1972, p. 301).

It is important that learning in an action research group is at all the levels of learning, Learning I, Learning II and Learning III and especially important that the group discussions are at Learning II level as that is the prerequisite for individuals and the group to be able to go to Learning III level so transformation can take place. In the Change Room going through the expansive learning cycle and the use of activity theory enhanced the learning. It was particularly important to point the direction to the tensions participants experienced in their practice. I also consider that the outside consultant played a large part in encouraging learning at Learning II level at the action research group meetings by questioning, challenging and connecting the issues in focus with concepts and theories from pedagogy. The outcomes of the Change Room indicate that the group discussions created a collective zone of proximal development for the participants. Engeström defines the collective aspect of Vygotsky's individual ZPD as the:

Distance between the 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 ... every day actions (Engeström, 1987, p. 174, as cited in Lave and Wenger, 1991, p. 49).

In the Change Room the participants learned through their action research projects and the discussions at the group meetings as the individual and collective modalities of learning described earlier indicate and through that learning process their professional development was enhanced that again leads to increased motivation to carry on with their action research and a new action research cycle can begin in the spiral of action research cycles. Other studies of action research groups have also concluded that the group discussions created a collective zone of proximal development (Haggarty & Postlethwaite, 2003; Wennergren & Rönnerman, 2006).

The participants, through their engagement and contribution enhanced their participation in the action research group in the Change Room as the individual and collective modalities of participants' learning indicate and they developed what Lave and Wenger (1991) describe as community of practice. The action research group in the Change Room has many of the characters that communities of practice have as learning communities as the group combines engagement, imagination and alignment (Wenger, 1998). For example, the action research group in the Change Room has the characteristics of long term interactive relationship through their meetings and working together as critical friends and in their collaborative projects. They shared methods and tools for doing action research, shared stories of their engagement through their presentations of their action research projects and they have negotiated their shared aim of increasing the responsibility of students for their learning. Additionally, they have created together in their community of practice a certain perspective on teaching i.e. a situated pedagogy of active student learning.

The diagram in Figure 13-2 shows the individual and collective modalities of learning in the Change Room. The vertical line shows learning from simple learning of facts, acquisition learning towards more complex expansive learning with Bateson three levels of learning along the line. The horizontal line shows individual learning at the left and collective learning at the right. Constructivist learning is shown both at top and the bottom on the left indicating that individuals construct new knowledge, understanding and ideas through the learning process. They also do that in collaboration with others but the base is the individual construction. Situated learning is shown both at the top and the bottom on the right side. All learning is situated and a social experience or "lived experience of participation in the world" (Wenger, 2009, p. 209). The individual and collective modalities of learning are placed in the diagram showing roughly the levels of learning they expand. In reality, learning is not as simple as the diagram depicts because learning is a very complex process where individual and collective learning connect together in complicated ways. In the Change Room we saw a combination of individual and collective learning. The individuals learned on their own during the process of their action research projects and collectively at meetings in the Change

Room when presenting and discussing their projects and these processes were interwoven through the modalities of learning in the Change Room. My conclusion is that all these metaphors and modalities of learning are necessary in order to enable teachers to transform their classroom practice.

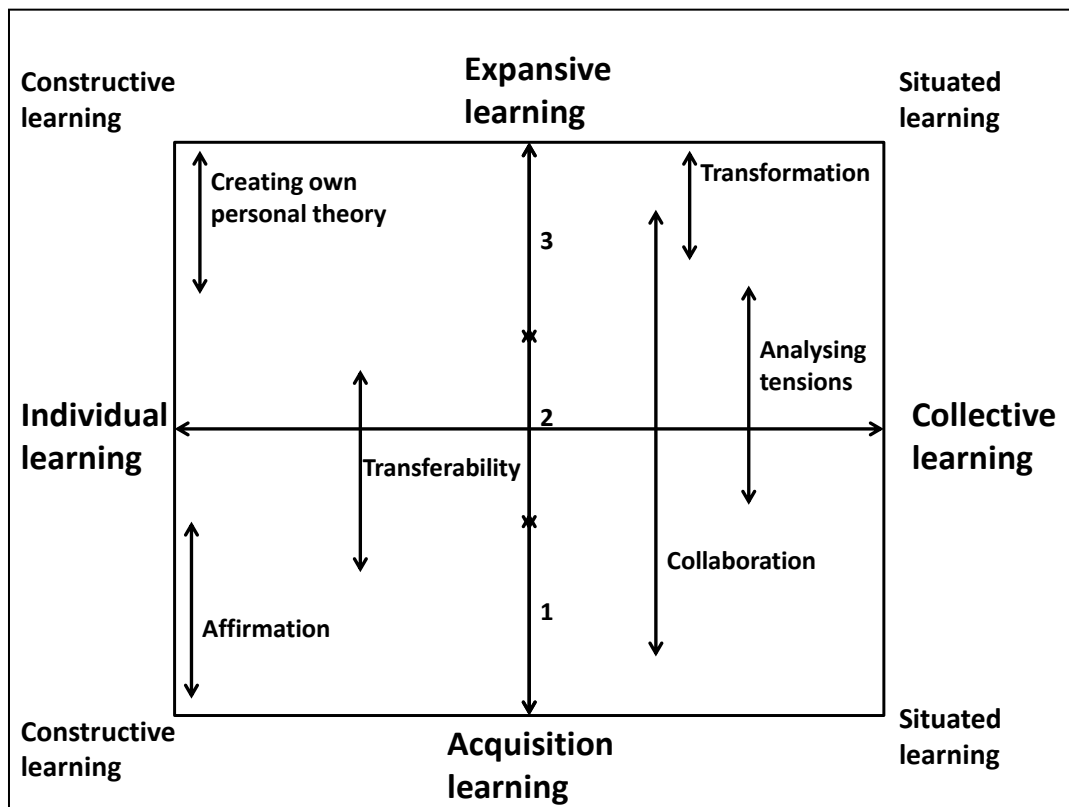


Figure 13-2 Metaphors and modalities of learning in the Change Room

In the next section I will answer the research question relating to how the work of the action research group can be improved. I will discuss what needs to be improved, make some concrete suggestions and consider the possibilities of the future use of the Change Room.

13.3 How can the work of the action research group be improved?

Potential improvements to the work of the action research group are revealed through the findings of the ideas of the participants in their evaluation of the Change Room and the tensions the participants were experiencing in the action research group.

One of the ways in which the work of the action research group could be improved is by enhancing the impact of the group within the school. In the evaluation participants were asked about their ideas about how that might be achieved. Their answers provided four ideas; increase the participants' presentations of their projects, increase the number of participants in the action research group, increase the encouragement of the school-leaders for action research, and show the effects of the action research on the teachers and on the students' interest in learning and their learning outcomes. Most ideas evolved around increasing the presentation of the action research for example at teachers meetings, for parents and for students perhaps with posters and short videos (Meeting, 10. 5. 2011, Participants evaluation of the Change Room).

Here are three examples of their anonymous answers:

Be more visible within the school and be more effective in spreading the good work.

By introducing the work of the action research group and collaboration more often at teachers meetings.

To have open meetings and invite new teachers to join the group

(Meeting, 10. 5. 2011, Participants evaluation of the Change Room).

Increasing the impact of the action research group is very important for the school. This has also been found important in former studies on action research groups (Harrington, et al., 2006; Warrican, 2006). Haggerty and Postlethwaite (2003) argued that if this is an aim of an action research group then it needs to be recognised as a complex matter that would take a long time and perhaps best to approach it as an action research project in itself. It is important to enhance institutional change in the first steps of promoting the pedagogy of active student learning both in order to enhance the school as a learning community and to accumulate our professional knowledge of classroom practice, which is the core of our schoolwork. That can be done for example with the publication and

presentation of a pamphlet on active learning and listening to students' voices. In the pamphlet, that could be called the Teaching palette, there would both be a general description and various examples through teachers' stories and short reports of individual action research projects. This could be followed with a presentation at a teacher meeting and meeting with the heads of subject departments in the school. All the teachers in the school could then choose from these teachers' stories in the Teaching palette, a new method to enhance active students' learning and a new method to listen to students' voices.

In a former study a change was introduced in a similar way for the whole teachers' group. In a secondary school in England a number of strategies, that were found useful by the action research group, to improve communication between teachers and students about learning, were introduced to the whole teaching community and recommended that all teachers should use at least three of the strategies in their teaching (Haggarty & Postlethwaite, 2002).

It would also be valuable for the action research group to develop further the idea of active student learning by focusing in our discussions on the object in the activity system of the classroom, the students' learning by looking closely at the concept of learning and "collateral" learning. "Collateral" learning is a concept from Dewey (2000) that points the direction to things that are learned indirectly. Hafþór, our outside consultant has pointed out the importance of paying attention to students' "collateral learning" of attitudes and skills that are learned through the process of taking part in various activities in the classroom (H. Guðjónsson, 2012). A movement in England "Building Learning Power" has stressed the importance of looking at the students' working methods by developing a culture in classrooms and in schools that "cultivates habits and attitudes that enable young people to face difficulties and uncertainty calmly, confidently and creatively" (Claxton, Chambers, Powell, & Lucas, 2011, p. 2). The aim is to give the students competence as learners and collaborators that will both guide them in their learning process and in life in general. They argue that it is important to focus holistically on the learner under four domains of learning i.e. "resilience" or the emotional domain, "resourcefulness" or the cognitive domain, "reflectiveness" or the self-managing

domain and “reciprocity” or the social domain (Claxton, 2002; Claxton, et al., 2011). I consider that these ideas fit well with the emphasis of the action research group on enhancing the responsibility of the students through active learning and giving more weight to students’ voices and could provide the group with ideas to develop further the situated pedagogy of active student learning.

The participants also mentioned increasing the number of participants in the action research group. I agree that it is important and consider the best way to do that is to present the work of the action research group to the whole staff community in the school. It enables the whole staff group and the teachers themselves to recognise and value what they are doing well and how they are improving their practice. One way would be to allow the school professionals in the service division i.e. the office and the library to join the action research group. Another way would be to establish a special action research group for them with an outside consultant. This could be convenient especially because the present action research group is large and then they would have a better opportunity to discuss matters related to the service in the office division. However, it would also have positive effects to have collaboration between the teachers and other school professionals to create a shared understanding of and implement the pedagogy of active student learning in all divisions of the school or all aspects of schooling. That could also enhance the development of cross curriculum agency within the school. There is a special opportunity next school-year as the school is at a crossroad, preparing the implementation of a new school curriculum in addition to taking a new extension building into use next autumn.

I consider it very important to continue to have a voluntary participation in the action research group, both because of the importance of personal ownership of research in action research and also because collaboration works better if people see it as a learning opportunity rather than as obligatory. Both Hodkinson and Hodkinson (2005) and Hargreaves (1994) stressed that teachers’ collaboration must not be forced upon the teachers. Former research on action research groups has also stressed that the teachers should have control over their research with a personal research question (Hall, 2009; Smeets & Ponte, 2009). Zeichner (2003)

came to a similar conclusion after reviewing several action research studies in USA and he also found that action research moved the teachers towards more student centred teaching practice as was the outcome in the Change Room. Blanchard (2008) also concluded that it was important for the teachers themselves to choose their own research question but in contrast he also found out that it was important for the teachers to have the research question directly relevant to the school's development plan. It is possible to find successful mandated action research projects where all the teachers in a school were required to participate in an action research but even then it was found to be important to emphasise teacher ownership of their research within the mandated context and allow variation in their implementation between departments within the school (Sheridan-Thomas, 2006).

The participants in the Change Room also mentioned increasing the school-leaders encouragement for action research. There were two school leaders in the action research group in the Change Room but not the head teacher. He was present at two of the meetings when the conclusions of the Change Room were introduced and when Jean McNiff came for a visit but he was not involved in the learning process in the Change Room as such. Nevertheless he supported the Change Room, he was often informed at school-leaders meetings of the work in the Change Room, the findings of the Change Room had influence on the aims set in the beginning of each school year by the school-leaders and the participants of the Change Room also introduced their interventions and action research project at teachers meetings where all the school-leaders and large part of the staff were present. He showed great support when he nominated the Change Room for the Innovation awards in public service and administration in 2011. The support of the head teacher is a prerequisite for the implementation of the situated pedagogy of active student learning at a system level in the school and his support is also needed to solve the tensions created by the new way of working in classroom practice through students' active learning and listening to students' voices, for example making the time-table more flexible, creating opportunities for crossing the classroom boundaries and rearrangement of furniture in the classroom. His encouragement can also have great influence on the participation of new teachers in the school. Former studies have indicated the importance of school leaders

support for bottom up change processes and capacity building (Fullan, 2006; Smeets & Ponte, 2009). Studies on action research groups in schools have also stressed the importance of school leaders support for the teachers' action research (Evans, 1997).

It is important to continue and anchor the aspects of the Change Room that were most appreciated by the participants in the evaluation of the Change Room i.e. the group meetings, the focus on tensions and the written minutes of the meetings. This study also confirmed the finding of former studies of action research groups of the positive influence of the outside consultant as was described and discussed in section 12.2.2 and therefore it is very important to continue and strengthen that collaboration (Evans, et al., 2000; Haggarty & Postlethwaite, 1995; Hall, 2009; Postholm & Skrøvset, 2013; Rhodes, et al., 2005).

The building of professional learning communities in schools calls for cultural changes that support action research and reflection in schools (Ingvarsdóttir, 2006; Snow-Gerono, 2005). In one study two cultural changes were identified following the shift from a traditional school culture to a PLC culture that are important for action research to thrive i.e. teachers' collaboration based on "dialogue" and the appreciation of "uncertainty" about classroom practice (Snow-Gerono, 2005). These changes created space and a feeling of security for teachers to question their own knowledge and practice and opportunities for conversations with colleagues about these tensions and new ideas for possible changes in classroom practice. This portrays the community of practice in the action research group in the Change Room and this contributed to enhancement of agency to change.

Jónas, describes:

The action research group and the Change Room has made many people realise that there is more than one way to do things (Jónas e-mail, 18. 3. 2015).

In order to improve the work of the action research group we also need to consider and find ways to solve the tensions the participants were experiencing in the action research group in the Change Room. The tensions, described in section 12.3 evolved firstly around lack of time, secondly emphasis on practice rather than on

theory and thirdly conflicting demands from action research and subject departments. This research confirms what some former studies have found that teachers experience lack of time both for their action research project and the group's meetings (Black, 2005; Clayton, et al., 2008; Peters, 2004). Blanchard (2008) found out that the extra time allocated to the teachers to carry out their action research projects he was studying gave the teachers the energy to complete their research. Haggarty and Postlethwaite (1995; 2003) found out that perceived lack of time was preventing some teachers to participate in the action research group they were working with in a secondary school in England. These findings suggest that we need to find ways for action research to be embedded in the teachers' work, with time and space allowed, within their teaching practice, both for individual work and collaboration. At present there is one hour per week for 36 weeks during the school year, allocated for teachers' professional collaboration in secondary schools in Iceland (*Kjarasamningur Kennarasambands Íslands og ríkisins (The pay agreement between the Icelandic Teacher Union and the state)*, 2014). This time is used both for meetings and collaboration within subject departments and cross curriculum collaboration as in action research groups. We need to find ways to influence both the Teachers Union and the Government in Iceland to increase this time for professional development and collaboration during the school year. McIntyre pointed out that "it must be rewarding for teachers to do research" and there time is of the essence (McIntyre, 2005, p. 379). Others stress that time is not enough and point out that action research needs to be embedded in classroom practice in order for it to become self-sustainable (Feldman & Atkin, 1995).

The tension between praxis and theory experienced by some of the participants in the action research group in the Change Room is reflected in the writings of scholars in action research. McIntyre (2005) argued that action research can provide deep understanding of practice and produce craft knowledge that leads to the improvement of practice but action research can not produce trustworthy public generalisable knowledge. Evans et al (2000) emphasised the transferability of action research rather than generalisability. Kemmis (2010) maintained that it is the main aim of action research to influence practice and create a better world rather

than create new theories. Elliott (2009) claims that teachers can develop theory through action research because although based on a particular situation the situation will repeat itself in different context. McNiff (2010) has emphasised both the improvement of practice and the importance of action researchers making claim to knowledge and contribute to the development of each practitioner's professional theory. McNiff sees action research as "a methodology for knowledge creation linked with personal and social betterment" (McNiff, 2011, p. 286). Somekh (2003) also argues that teachers make contribution to knowledge through their action research. Theory generated by teachers is an integral part of their practice but they also use theories from others to inform their understanding of teaching. Perhaps this is the way to solve the tension that some of the participants experienced between theory and practice i.e. not to look at them as two separate aspect of work but rather to view theory and praxis as interwoven as one unit.

There are conflicting findings on this issue in former studies with action research groups. Researchers from universities as Rhodes (2005) and Postholm and Skrøvset (2013) have found it difficult to introduce theory to the action research group whereas Bartlett and Burton (2006, p. 402) found the teachers involved in reading relevant literature to "become increasingly involved in theory". Ellis (2011) argues that action research produces a special kind of knowledge, i.e. practical knowledge but linking it with the conceptual framework of the activity theory can enable practitioners to develop general theory about practice. The Change Room is designed to make a bridge between practice and theory and utilise the activity theory to enhance improvement of practice. We saw in the Change Room the transferability of their research within the action research group, we saw teachers creating their own personal theories about teaching and we saw that activity theory appealed to some of the teachers but not to others. Perhaps the next step in developing the Change Room is to encourage the participants themselves to visualise their action research projects in the activity system of the classroom as will be discussed in section 15.3.

Some of the participants experienced tension between themselves and their subject department and that can also be viewed as a role conflict between two

activity systems i.e. as an action researcher and a teacher in a subject department. Jónas with alpha - beta - gamma ($\alpha\beta\gamma$) assessment system in Mathematics, and Rakel with expression in Icelandic carried out their action research projects with a class that only they taught in order not having to negotiate with their subject department about the project, see section 12.3.3. Similar role conflict was later experienced in Sjárvarsíðuskólinn by Ragnheiður (Selmudóttir, 2014) in teaching German but there she needed to work with three other teachers in the same course and that caused disturbances at departmental level because the demands of standardisation, covering the curriculum, rigid semester plan and fixed timing of exams did not fit very well with the action research project of increasing students' autonomy in the classroom, increased collaboration with students and active and creative students' assignments. Some changes were made the next year in the German subject department to give the teachers more space and leeway for personal choice of teaching and learning methods in addition to discontinuing the standardisation of tests during the term but the final test is still the same for all the students in the same course (Selmudóttir, 2014). This can be viewed as a sign of fourth level or quaternary contradiction between these two activity systems. This quaternary contradiction can either lead to changes in the subject department and transformation at system level or it can lead to stagnation i.e. the changes tried out in practice will stop and the old way of doing things will continue to be the dominant practice. The development of individual action research projects after the Change Room leading to changes at system level will be further described in chapter 16.

In the next chapter I will discuss what is involved in doing an insider action research and the tensions experienced through the role duality of being a researcher and a deputy head teacher in the Change Room. I will then address the limitations of my research and discuss alternative ways of approaching certain steps in the Change Room with emphasis on participant centred research.

14. ROLE DUALITY AND PARTICIPANT CENTRED RESEARCH

The Change Room is based on an insider action research and the advantages and difficulties of this were discussed in section 8.3. The changes in the division of labour in the action research group when the Change Room started were discussed in section 12.2.3. I was in a dual role in the Change Room as a researcher and as a deputy head teacher. This issue will be explored further under the headings of “preunderstanding”, “role duality” and “organizational politics” and is grounded in the work of Coghlan and Brannick as they emphasise these as three core elements of insider action research (Coghlan, 2003, 2007; Coghlan & Brannick, 2001; Holian & Coghlan, 2013).

14.1 Preunderstanding

I discussed positive and negative effects of having preunderstanding of Sjávarsíðuskólinn and knowing most of the participants in the Change Room, in section 8.3. It had great advantages but it also influenced all my interpretation of the data. An outsider might have interpreted it differently. Nevertheless it is the participants’ understanding, experience and knowledge creation that I have tried to describe and interpret in my thesis. I consider that my relationship with the participants in the action research group increased the reciprocity in my research and thereby its trustworthiness (Harrison, MacGibbon, & Morton, 2001). It reduced the power imbalance between me as a researcher and the participants and it allowed me to engage in more dialogue with the participants and more easily to perceive the viewpoint of the participants in the Change Room.

14.2 Role duality

The idea of the Change Room came from me, a school-leader and therefore there was a danger that the teachers considered me having the ownership of the research. Yet the foundation of action research is that the teachers themselves experience having the ownership of their action research (McNiff, 2010). Kember (2002) maintains that the ownership of research is included in the definition of action research. He considers the first condition of action research to be the aim to improve practice, the second the action research cycle and the third the ownership of research:

The third condition implies ownership of projects by those involved; in this context, by the teachers. In this sense the quality mechanism can be characterised as a bottom-up quality enhancement process concentrating upon issues of interest or concern to the teachers themselves. It differs, therefore, from the more common quality assurance procedures that are mandated from the top, and have an imposed focus and agenda. (Kember, 2002, p. 85)

There was a tension concerning the ownership of research in the Change Room. To emphasise the participants' ownership of the research I decided that the Change Room would depart from the traditional Change Laboratory regarding two important aspects. Firstly, in Engeström's Change Laboratory the outside researchers select which parts of classroom practice are put in the "mirror", and analysed at the group's meetings but in the Change Room the participants themselves select and present the material. The participants also identified the tensions they were dealing with in their professional practice. Secondly, the Change Room differs from the traditional Change Laboratory in that all group members work on making a particular change in the practice but in the Change Room the group was working on many different change projects as each individual decided for themselves what changes are necessary to make in their practice. Having the teachers selecting and presenting their own individual action research was done both to insure their ownership of research and to prevent them from experiencing the tensions as a criticism of their work from me as a school-leader. I discussed this extensively with my critical friend and we both agreed on this conclusion.

I interviewed one of the participants in the Change Room about my dual role in the research and she agreed that my position in the action research group changed when I took control of the group in the Change Room but that people separate my roles, as a researcher and as a school leader.

After this project started you have taken the control. I have become more passive and I wait for you to tell us what to do next.

... That you are a school-leader doesn't bother me, I don't think it has any influence. ... I don't think we look at you as a school-leader in this group but we look at you as the leader of this research project (Interview with participant in May 2010).

In discussions on individual action research projects the attention was in general on the classroom practice, what the teacher was doing and communication between the teacher and the students. In the Change Room, especially in the participants' interviews and discussions about the past the attention was directed at changes in Sjárvarsíðuskólinn as a whole. Through these interviews and discussions I gained information I did not know how to use as a deputy head teacher. I experienced "role confusion" between the roles of the researcher and the school-leader (Coghlan & Brannick, 2001). As an example it appeared in the interviews about the past that the older teachers thought that they had lost power and the power had moved from the teachers into the hands of the head teacher and senior school-leaders. They claimed that the power had been moved from the teachers' meetings into the hands of the head teacher. There had been two teachers' representatives in the school board with voting power but now they have one representative able to speak but not to vote. Subject departments had more power before and the meetings of the heads of subject departments are few and not as useful for cooperation and information giving as the weekly meetings of the heads of faculties were before. One teacher explained the power situation now as "orders coming from above" and that "it is difficult to have discussions about the school-leaders decisions" (based on interviews of participants in the Change Room about the past in December 2009). When I listened to these interviews and the discussions about them at the meeting in the Change Room on the 11th of February 2010 I experienced this discussion as a criticism of myself as a deputy head teacher and as a part of the school-leaders team - "feel that I am kicked into the role of the deputy head teacher without being able to control it" (Research diary 10. 3. 2010). This feeling came to me as a surprise at first but later I realised that the explanation was that I partly agreed with the analyses of the teachers of the changes in the power situation and that this development is in conflict with my personal values on school-leadership where I consider that democracy and

distributed power should be in the forefront. I am therefore experiencing a personal conflict as the power development in Sjárvarsíðuskólinn has been in conflict with my personal values.

14.3 Organizational politics

Action research is at the same time personal, professional and political as stated at the beginning of the thesis (Carr & Kemmis, 1986). It is complicated to be both a researcher and a deputy head teacher because at the same time one needs to work towards changes and deal with the politics behind the scenes. Buchanan and Boddy describe the political role of the school-leader with two concepts that I consider useful here i.e. “performing” and “backstaging” (Buchanan and Boddy (1992) as cited in Coghlan, 2007, p. 298). The concepts come from Goffman’s theatrical theory in sociology, where he compared the society with a theatre and the people playing different roles and staging their behaviour as performance (Goffman, 1971). My “frontstage performance” involved playing the role of the leader of the Change Room and to be active in the change process. At the same time I had another role at the “backstage” as I needed to maintain support for and work against any resistance to the research. It was very important that I managed to keep the group’s consultant from the University as there had been a great cut in Sjárvarsíðuskólinn’s financial expenditure since 2009 because of the economic recession in Iceland. It was also very important that I applied for and received a grant of over 2 million Icelandic kronas (£11.000) for the Change Room from “Sprotasjóður”, a fund run by the Ministry of Education and Culture. There I got a great support from my critical friend. At the same time I was encouraging people to continue in the research and not give up although they sometimes felt they were not doing enough, had missed a meeting, had too little time for doing their action research or didn’t yet see how activity theory would be useful in their teaching practice.

My situation was even more complicated because of the planned changes to take place in the autumn 2010 with a new system of eight week periods and a new school curriculum. But the changes did not take place as is explained in Appendix 1. During the school year 2009-2010 these planned changes caused uncertainty

because some of the teachers worried about their job security, it was unclear what pay rise it would involve and some thought it professionally unclear what the changes involved. One example of how this uncertainty appeared in the Change Room is the following discussion at a meeting where participants express their view that is unclear what is meant by the aim of Sjárvarsíðuskólinn of increasing students' learning through assignments:

One participant: "this is the only teaching method that I consider appropriate for the periodic system" [he was referring to project work or cooperative students' learning]. ... Second participant: "It has never been defined what through assignments is". ... Third participant: "Should the school leaders not have a meeting for all the teachers but not only this group here and explain what you mean by learning through assignments?" (Meeting, 15. 4. 2010).

Following this meeting I suggested that students' learning through assignments would be discussed at a teachers' meeting in April. This took place but probably a much more discussion was needed in the teachers group about this issue at the time and also other aspects of the new periodic system. This is an example of how my researcher role influenced my role as a deputy head teacher.

Another example from the Change Room of worries about the influence of the new periodic system is teachers' resistance towards the abolition of a special period in each semester for final exams.

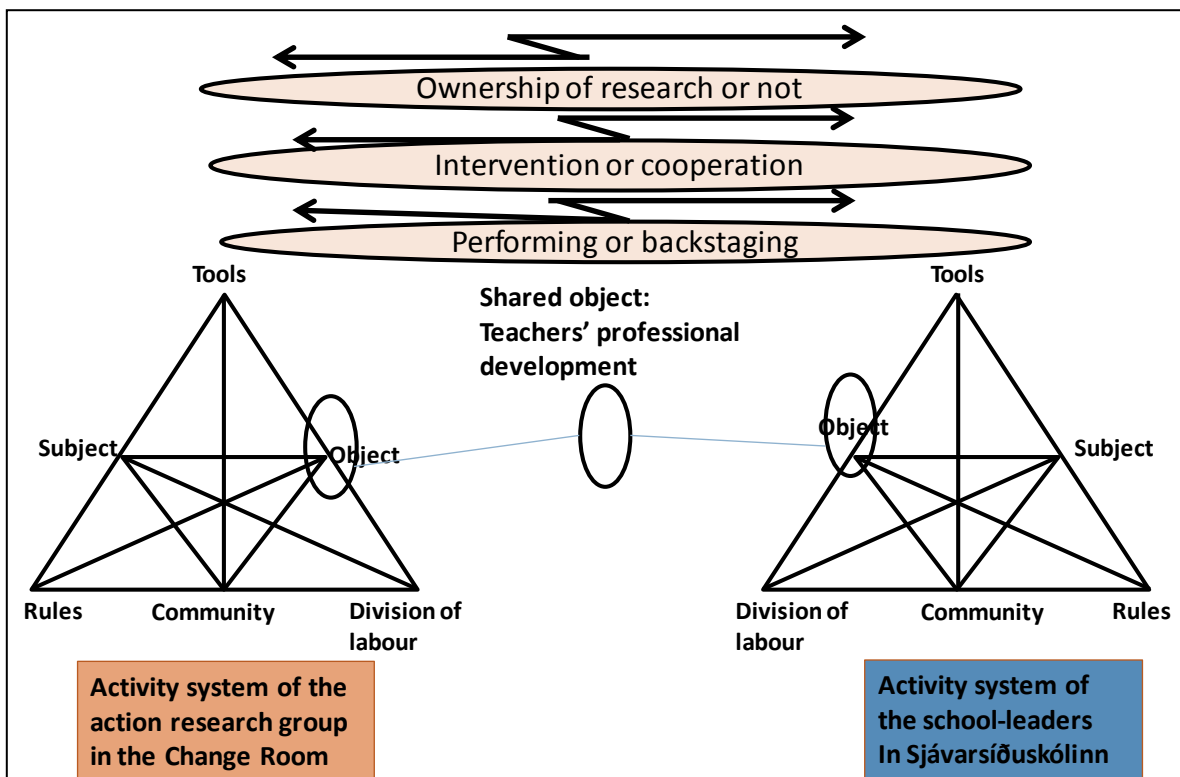
Magnús expressed his view:

We need to have in mind regarding the periodic system that it is very different to have short exams in various learning items like in continuous assessment or to have an overview exam. It must not disappear to have overview exams as final exams (Meeting 11. 2. 2010).

It is likely that some teachers would have carried on with having final examinations in the new periodic class based system although they would have to use their lessons for them and do all the organising themselves.

14.4 Tensions at the boundaries of two activity systems

I was a subject in both the activity systems of the action research group in the Change Room and the school leaders group and in both activity systems the shared object was the professional development of teachers. The conceptual framework of Engeström's third generation of activity theory is used here to show my conclusions. The main tensions I experienced are summarised as being around participants ownership of research, the research being my intervention or in cooperation with the participants and my performing in the Change Room or doing all the political backstaging work of the deputy head teacher. My conclusion was that I was unable to co-configure my roles as a researcher and a deputy head teacher. I needed to accept and learn to live with the role conflict or tensions between these two roles and try to utilize it in both activity systems i.e. of the action research group in the Change Room and the school leaders group in Sjárvarsíðuskólinn. It was first and foremost a methodological role conflict because of the importance of ownership of research in action research and therefore it was very important to stress co-operation rather than intervention and create a participant centred study rather than a researcher centred study (Ravitch & Wirth, 2007). I did that by emphasising the participants' construction of knowledge through respecting their ownership of their action research projects and creating situation for them at the groups' meetings, the pair interviews and small group discussions to identify themselves the tensions they were experiencing in classroom practice, as illustrated in Figure 14.1.



(Based on Engeström, 2001, 2007b, 2009b)

Figure 14-1 Researcher's role conflict or tensions at the boundaries of two activity systems.

14.5 Limitations – How could it be done differently?

14.5.1 Adding personal life histories into the historical analysis

In the Change Room when considering the changes from the past to the present in the school it would have been useful to put more emphasis on reviewing the life history of each participant. Sannino (2008) pointed out that Change Laboratories have generally focused on the history of the institution rather than on the participants personal history of work but she considers both historical perspectives very useful. I tried to link these two together in the Change Room by directing the discussion about the changes from the past to the present both at the development of the school and the participants experience of that development. For example it would have been interesting to use a tool such as an autobiographical text, a mind map or a flow chart and for each participant to look at their personal development and then introduce that to the group. This method would help teachers understand

how social and cultural factors influenced their development, professional identity and personal agency. It is acceptance of the claim that it is the whole person learning and that some of this learning is not recognized by ourselves until long after the learning took place (Jarvis, 2006). It would also be a recognition of the importance of the influence of individual biography and dispositions on the participant's learning process (Hodkinson, et al., 2004). It may also increase the participants' ownership of the change process as Ruddock pointed out since life histories address the personal meaning of the participants:

I see it [biographical framework] as bringing about a motivation towards change that is personally founded, and I see it as being about meaning that is explored in relation to self as well as in relation to the professional situation (Rudduck, 1988).

The group could then discuss the similarities and differences in the participants life histories and start to identify the tensions the participants are experiencing. Sannino did this successfully in a Change Laboratory in a school in Italy where she asked the participants to create their autobiographical texts which were then used as a mirror "material" (Sannino, 2010). This is part of the development within Change Laboratories to increasingly recognise the importance of the participant's subjective individual involvement in the transformative process in Change Laboratories (Sannino, 2010). It is important to connect together the individual and collective learning that takes place in workplace learning like the Change Room.

14.5.2 Adding the activity system of learning

I made little direct contact with the students except in my observations in Mist's action research project when I visited her classroom and went with her and her students to visit the care home for the elderly described in section 11.5.1. I did not interview the students nor did I have students' focus group discussions. I used information about the students' views when possible but through information from the teachers, i.e. the teachers collected the data as part of the action research cycle. This study is from the point of view of the teacher although the school has many voices and the study can be criticised for that. At one of the group meeting in the Change Room, when discussing the visualisation of the action research

projects in the activity system of the classroom the question arose if the students were also subjects but not only the teachers. Jónas (40 Mathematics 11) explained that he was not sure if there was only one subject in his case, the teacher in the activity system of the classroom or if the students were also subjects (Meeting, 3. 2. 2011). It would be possible to have the students as subjects alongside the teacher in the activity system of the classroom but it would also be possible to look at the students as subjects in another activity system.

It would be possible to look at the teachers' action research projects both from the view of the teacher and the student and investigate the learning in the classroom as a shared object of two activity systems, one of teaching with the teacher as the subject and one of learning with the student as the subject. The students are then viewed more as an active agent of their learning process and co-workers with the teacher in the classroom and that approach may be more accurate in view of the situated pedagogy of active student learning now being developed in Sjávarsíðuskólinn.

Virkkunen and Newnham (2013) elaborated on the possibility of looking at learning as a shared object of teachers and students:

Thus, some parts of educational activity are more accurately depicted as forms of co-construction of a potentially shared object This might be the case especially in various forms of school learning that are based on joint enquiry and development. In that case, knowledge creation is a partly shared object of teachers' educational activity and students' activity of socializing themselves into the society (Virkkunen & Newnham, 2013, p. 36).

To investigate this would require more emphasis on gaining information gathering data directly from the students to get a better insight into their point of view. This approach would increase the emphasis on third generation of activity theory with two or more activity systems and would also be in line with increased emphasis on students' voices in the classroom practice.

14.5.3 Adding participants' participation in the data analysis process

The participants in the Change Room did not themselves visualise their action research projects into the activity system of the classroom as has been done successfully in some Change Laboratories (Hooker, 2009; Virkkunen & Newnham, 2013). I visualised their projects after their presentations and reported to the whole group at a meeting in the Change Room where comments and discussion on my interpretation took place.

If the participants had themselves visualised their action research projects in the activity system of classroom practice they could have learned more. This would have been a process for more sustainable professional development since it would have enabled them to continue to use this tool in the development of their classroom practice. However it is not certain that all the schools' professionals would be willing to participate fully in this process of theory application having in mind the tension between praxis and theory discussed in section 12.3. It would be possible to have this analysis process partly collective through discussions at the meetings in the Change Room. My critical friend considers it a more realistic idea to analyse the action research projects together at the group meetings rather than each participant analysing the projects by themselves between the meetings (Personal communication, June 2015).

In the final chapter of the discussion I will provide a brief overview of how the idea of active student learning has been anchored in classroom practice in Sjárvarsíðuskólinn after the Change Room that supports the claim that it has potential for school system changes. I will describe the development of three examples of projects in the Change Room, how the cross curriculum optional course of Christian IV became a prototype for other new cross curriculum optional courses, how the alpha - beta - gamma assessment system has been accepted as a successful tool both within the Mathematical department and by students and how cooperative learning has been gaining strength in different school subjects.

15. DEVELOPMENT AFTER THE CHANGE ROOM

15.1 Cross curriculum optional courses

The cross curriculum optional course developed by Bjarki (60+ Danish 23) and Sandra (40+ History 20) on Christian IV (King of Iceland and Denmark) in History and Danish that was presented in the Change Room became a model or a prototype for other new optional courses created in the school in the coming years involving teachers' cross curriculum cooperation connecting history and foreign language. The year after the optional course on Christian IV was taught for the first time a new cross curriculum optional course was created that linked French and History and after that three optional courses have been created that link language and history i.e. German, Italian and English. They all also involved students' study trip abroad (to Paris, Berlin, Rom and Boston). These optional courses involved temporary cross curriculum cooperation between different teachers sometimes lasting for one school year and in other instances for longer periods, five years and perhaps longer.

Fourteen cross curriculum optional courses have been developed between different subjects (see Table 16-1). Of these, nine have been taught. Five have not yet been taught as there were not enough students choosing the optional course. The cross curriculum optional courses that have been taught all involved independent student project work and group work with emphasis on connections with the students' reality and their interests.

From the list of course descriptions for cross curriculum optional courses in Table 15-1 one can see that these are varied school subjects that are being linked together in cross curriculum work of teachers from 12 out of a total of 15 subject departments in Sjárvarsíðuskólinn. I consider this a system change within the school in cross curriculum teachers' work and it has real potential for changing classroom practice in the school as it breaks the boundaries between the school subjects and creates a new form of cross-curriculum teachers' collaboration.

Cross curriculum optional course	Teaching subjects
Beowulf	English and Icelandic
Berlin	German and History
Boston	English and History
Christian IV	Danish and History
Criminal investigation in the spirit of CSI	Biology, Chemistry and English
Cultural landscape	Geography and Geology
Finance and finance literacy	Economics and Sociology
Nature literacy and outdoor activity	Biology and Geology
Paris, in historical context	France and History
Pictures in Mathematics	Mathematics and Visual Arts
Research in Biology	Biology and Mathematics
The eternal city (Rome)	Italian and History
The Human Body in history and at present	Biology and History
The Hunger Games, fantasy or reality	Icelandic and Sociology

Table 15-1 Course descriptions for cross curriculum optional courses

15.2 Alpha - beta - gamma ($\alpha\beta\gamma$)

The action research project by Jónas (40+ Mathematics 11+), alpha - beta - gamma ($\alpha\beta\gamma$), cooperation with students on assessment or individual forms of assessment has been developed further within Sjávarsíðuskólinn both in different years of study and in different study lines in Mathematics as well as and in other school subjects, for example Icelandic, Physics, Economics and Biology.

It was used in the natural science study line in the first year of studies were three teachers agreed to try out a new version of alpha - beta - gamma ($\alpha\beta\gamma$) where students can choose the composition of assessment at the end of the semester:

In the first year class [in natural science department] we have developed one new version where the student's choice occurs afterwards [end of semester]. The final exam weights differently but the choice is always in the favour of the student. If the exam goes very well then it weighs 70% but only 60% if that gives the student a better outcome. This choice is made after conversations with the students (Description from Jónas when looking at his project put into the expansive learning cycle. Meeting, 7. 5. 2012).

The alpha - beta - gamma ($\alpha\beta\gamma$) system of assessment has been accepted within the department of Mathematics as a successful tool for teachers to use if they so choose. Apart from Jónas at least two other teachers in the Mathematics department have used the system. One teacher in Mathematics developed a slightly different version that she used in the first year of study in the social science department and she preferred to call it alpha - beta - delta ($\alpha\beta\delta$) in order to differentiate it from the original alpha - beta - gamma system (Personal communication).

After the Change Room Jónas has been active in presenting his project at meetings and conferences for teachers outside Sjávarsíðuskólinn. These included a presentation in a teacher training class in the School of Education in the University of Iceland in the autumn 2011, a conference held by the Society of People Interested in School Development in November 2012, a teacher meeting in a compulsory school next to our school in January 2013, and a conference “Menntakvika” at the School of Education in the University of Iceland in September 2013.

At the conference “Menntakvika” in 2013 Jónas emphasised the importance of dialogue with students that he sees as fundamental in the alpha - beta - gamma ($\alpha\beta\gamma$) system. Jónas describes it as follows:

My vision is that successful teaching involves dialogue with students. Dialogue about teaching methods, assignments, assessment and the object of learning. It was dialogue and consultation with students that led to alpha - beta - gamma ($\alpha\beta\gamma$) (Ásgeirsson, 2013).

Jónas did a survey in the beginning of spring semester 2015 among students in one class in their third study year in the Economics study line in Mathematics. Of thirty students in the class twenty-two participated in the survey. Jónas chose this class as many of the students have experienced the alpha - beta - gamma ($\alpha\beta\gamma$) assessment system for three school years. When asked about their opinion of

alpha - beta - gamma and if they considered it a fair system all of the students were very positive. Here are two examples of their anonymous answers:

I consider the alpha - beta - gamma system a very good system that produces fair outcome because you can adjust the system to your strengths.

I consider it good to have a say in the value of the assignments and exams. It is fair (Ásgeirsson, 2015).

When asked about the main faults of the system and how it could be amended half of the group said the system had no faults but the other half mentioned two main issues. Firstly that it is unclear how the grade is calculated, especially for the assignments and secondly that the student can make a wrong choice. Here are two examples of students' anonymous answers:

It is possible to make a wrong choice and one doesn't always get a grade for all the assignments.

The students don't realise how this is calculated. It must be explained to the students (Ásgeirsson, 2015).

Jónas concluded that the answers showed that the students experience the system as it is supposed to work and it meets their needs but the system needs to be presented more clearly to the students.

It is obvious what is needed is a better introduction of the system and to create examples of how grades are calculated in the system. Then it is necessary to respond to what is pointed out here, that students think it is unclear how grades for assignments are calculated in the system (Ásgeirsson, 2015).

When the students were asked if they wanted to continue using the alpha - beta - gamma ($\alpha\beta\gamma$) assessment system in the spring semester of 2015, 21 said yes and one said, I don't mind. This shows clear students' approval of the alpha - beta

gamma system although it is also clear that some of the students would like to gain a better understanding of how the grade is calculated at the end of the semester.

15.3 Cooperative learning methods

Cooperative learning methods have been gaining strength within the school during the last years. It began within the Biology and Danish departments in the Change Room but has now spread to other departments for example Chemistry, Citizenship, Economics, German, Mathematics and Sociology. Biology teachers continued to implement the methods of cooperative learning in their classroom, both in the first and third years Biology. Nanna (50+ Biology) and Katrín (20+ Chemistry 2) introduced their work at a teacher meeting in February 2012. They had decided to abolish the final exam in the course and instead increased emphasis on continuous assessment and collaborative and cooperative learning (Hrólfsdóttir & Víkingisdóttir, 2012). Their conclusion was that students' active participation in the learning process had increased and also the students learning outcome. The average grade in the course had increased from 5.5 in 2005, 6.0-6.2 in 2006 to 2009 and up to 6.6 in 2010 and 2011 (Hrólfsdóttir & Víkingisdóttir, 2012).

In the autumn 2012, ten teachers in the school formed a group centered on implementing methods of cooperative learning in the classroom. On the initiative of Nanna, the group had a course in cooperative learning strategies and a follow up support from the teacher Guðrún Pétursdóttir, who is a sociologist. Pétursdóttir has specialized in creative and cooperative learning strategies and has led several courses and training programs both in Iceland and Europe. She is the author of two books on cooperative learning in multicultural groups. During the school year 2013 - 2014 the group continued their collaboration with outside consultation from the same specialist.

Nanna has presented her action research projects on cooperative learning at Icelandic and Nordic teachers' conferences in Reykjavík during the last two years where she also gave the participants an opportunity to take part in a cooperative learning project on action research.

15.4 Further examples of active student learning

I have described three examples of how the increased emphasis in the Change Room on active learning, listening to students' voices and cross curriculum collaboration has continued to flourish and grow in Sjávarsíðuskólinn after the Change Room. Other examples include how Socratic discussions have been developed by Dagmar (50+ Citizenship 9) and implemented at departmental level in Citizenship for students in their first year of studies. The visits to the care home for the elderly were continued by another teacher in Icelandic, Helena (30+ Icelandic 1) and also developed further by Mist (50+ Icelandic 22) for students in Icelandic in their second year of study who interviewed the old people about how the vocabulary in Icelandic has changed during the last decades. New optional courses have been developed with emphasis on students' project work and students making decisions about the content and assignments in the courses devised by Sandra (40+ History 20) in World War II, and Finnur (30+ English 2) in Delightful Reading in English. The development of an optional course by Andrea (40+ Mathematics 6), Students' Collaboration in Mathematics, involves students in their third and fourth study year of the natural science study line guiding students' learning in their first and second study year in special support-lessons once a week over the school-year.

This course is quite a hit between the students. The older students have the opportunity to go over old subjects and get better prepared for the final exams. The younger students are getting the help they need with their homework and as a bonus, they get to know and talk to older students (E-mail from Andrea, 7. 4. 2015).

Here the younger students might be increasing their level of developmental potential if the help with their learning they are receiving from the older students is in their zone of proximal development as Vygotsky called the space where the process of internalisation of learning occurs (Vygotsky (1978) as cited in Daniels, 1996).

We have perhaps seen the largest steps taken towards increasing the students' active participation and influence on their learning in the optional courses where

the teachers have the most autonomy and where they are creating their own new curriculum course descriptions. The students are positive about these changes and experience increased influence on their learning according to teachers presentations of their action research projects. The older students are perhaps appreciating their increased participation in their learning and could gradually be feeling that they are “old-timers” and increasingly accepted as participative learners in the school (Lave & Wenger, 1991). However, the teachers are also facing difficulties as students’ actual attendance is low and the students are not handing in all their assignments and project work on time (Kristjánsdóttir, 2012).

In the final chapter I will state the main contributions of the study to knowledge, link the main findings together, discuss policy implications and future research. I will make suggestions about how future research can build on the new methodology of the Change Room developed in this research and how it can be used to implement the pedagogy of active student learning at school system level and to enhance further participant centred research.

16. CONCLUSION

The overall aim of the project was to enhance Sjárvarsíðuskólinn as a learning community and strengthen action research as a model for teachers' professional development. The research questions were:

1. How can the Change Laboratory be used productively with action research to enhance professional development?
2. How does participation in action research influence the participants?
3. How can the work of the action research group be improved?

One of the most significant aspects of the study was the way action research and activity theory were combined together in a new methodology, the Change Room. This effective new way to enhance teachers' professional development which enabled participants to develop a new situated pedagogy of active student learning informed by attention to student voice. The study shows that action research has potential for facilitating sustainable changes in classroom practice but barriers exist when attempting to implement changes at school system level.

Activity theory provided the theoretical and conceptual framework of the research. The Change Room is developed from Engeström's Change Laboratory that is based on the theory of expansive learning and Vygotsky's method of double stimulation. Second and third generation activity theory were used in the data analysis process with emphasis on identifying tensions or manifestations of contradictions and visualising the action research projects in the activity system of the classroom.

The research was a case study of teachers' action research as it was reported and discussed in the Change Room that is embedded in my own action research as a deputy head teacher. In the Change Room the methodologies of the expansive learning cycle and action research were combined together. The data collection methods used were documentary analysis, interviews, observations, surveys and a research diary.

The main departure of the Change Room from Engeström's traditional Change Laboratory is that the expansive learning cycle and the action research cycle are combined together in the Change Room. The participants in the Change Room themselves collect and present the data that is used as the first stimulus in the learning process rather than outside researchers presenting the data as occurs in the Change Laboratory. The solutions proposed to address the tensions experienced in classroom practice are investigated on an individual level through the action research projects of the participants and not planned at system level and carried out by the whole group as in Change Laboratories. Sustainable changes were made in classroom practice by the participants. These involved a shift from teaching to learning that increased students' responsibility for their learning through increased emphasis on active learning and listening to students' voices. A situated pedagogy of active student learning was developed that linked together the action research projects in the Change Room.

The study showed that when the expansive learning cycle and the action research cycle were combined in the Change Room both modalities of individual and collective learning enhanced participants agency to change their practice and to develop cross curriculum agency. Teachers' learning through cross curriculum collaboration can be described as "knotworking" that is an emerging form of developmental work according to Engeström (2008a). Knotworking goes beyond team work, it is temporary, initiated by the teachers on equal grounds and involves mutual learning through interaction where the teachers are trying to change the object of students learning with tools and ideas from different teaching subjects. The participants' positive evaluation of their experience of the Change Room showed the impact of discussions at the meetings, the focus on the tensions and the role of the outside consultant in the learning process. The action research group created a "community of practice" (Wenger, 1998). The literature review revealed that professional development is more successful when it is long term, school based, and collective with emphasis on teachers' authentic and creative learning. This study showed that these are all characteristics of action research as it was reported in the Change Room and fits well with the modalities of learning identified in the case study of the action research group. It is a long term process

and for some of the participants action research has become a way of life. The Change Room enabled a combination of individual and collective learning with emphasis on collective processes at the group meetings where teachers co-constructed their own knowledge about classroom practice. The teachers also developed their professional identity by participating in the action research community of practice.

This study revealed that the teachers experienced tension around lack of time both for the group's meetings and their own action research projects. This has policy implications as it is very important to find ways for action research to become embedded in teachers' work, with both time and space allowed since this study and other research has highlighted that action research is a powerful approach for promoting professional development and improvement of practice (Somekh & Zeichner, 2009). It is therefore vital to increase the time allocated for teachers' collaboration and professional development during the school year.

This study has enhanced an understanding of the important role of an outside consultant in the discussions at the action research group meetings. His multi-faceted role involved praising, supporting, pointing out links to theory and pedagogy, encouragement to disseminate results, questioning and challenging. By combining these together he built up trust within the group and showed us the way forward (Postholm & Skrøvset, 2013). This has policy implications as it shows the potential of developing relationships between universities and schools to enhance teachers' professional development. It is vital, if the academics are to be willing to devote their valuable time for consultation in schools, that universities value consultation in schools both in terms of time and academic progress alongside teaching and published work. Their consultation can lead to creation of new educational knowledge in the schools and have very positive impacts through the enhancement of teacher and student learning.

The study provides direction to useful future research. Firstly, it would be valuable to survey all the teachers in Sjárvarsíðuskólinn in order to learn about how the process to promote the pedagogy of active student learning is working. This could provide information regarding the potential of reconceptualisation of the

approaches taken to teaching and learning whether teachers are focusing on active learning and responding to students voices.

Secondly, the Change Room could be repeated with different groups within Sjávarsíðuskólinn. The Change Room could be carried out again with the action research group in order to continue the change process with the aim of embedding in practice the changes that are being made. We could also create a new Change Room intended to disseminate the results of the first Change Room with voluntary representatives from all subjects departments. Here an action research approach would be used for a specific collective aim but again based on individual action research projects with subject departments utilising different approaches appropriate to their own contexts. Individual subject departments could also be invited to conduct a Change Room approach in order to investigate the historical development of that particular subject department, the tensions the teachers are facing in classroom practice in their subject and find ways to improve the practice in that subject. A third possibility is to create a Change Room with all the senior managers in the school in order to promote the shift towards pedagogy of active student learning. This could be connected to the implementation of the new school curriculum that could be developed into a learning curriculum. This could provide a new opportunity for enhancing agency to change at school system level. A prerequisite of successful work in this group is the participation of the head teacher as he leads the implementation of the new school curriculum and needs to be willing to overcome potential barriers to the successful implementation of the situated pedagogy of active student learning. Transformation at system level calls for joint efforts of individual teachers, subject departments and school leaders. Regarding all these ideas for future Change Rooms it is important to have voluntary participation both because of personal ownership of research (McNiff, 2010) and because collaboration works much better if it is viewed as an opportunity rather than an enforced duty (Hargreaves, 1994).

If the Change Room process is carried out again the present study indicates that in order to address the limitations described in chapter 15, it would be useful to increase emphasis on participant centred research by looking at the life history of

participants in connection with an historical analysis of the school. Teachers could also be more involved in the analysis process of using activity theory to visualise the action research projects in the activity system of the classroom. This would recognise the importance of the participants' involvement as subjects and their ownership of research. It could also be useful to involve the students more in the research and to gain information more directly from them. We could look at the student learning in the classroom as a shared object of two activity systems, one of "teaching" with the teacher as the subject and the other of "learning" with the student as the subject. It might also be valuable to put more emphasis on analysis of the discourse at group meetings of the action research group to be better able to evaluate changes in group members discourse over time and study the development of use of concepts and language by the group members about their classroom practice.

Dissemination of findings might lead to others schools using the methodology of the Change Room to combining the action research cycle and the expansive learning cycle in order to enhance teachers' agency to change their practice with a shift from teaching to student learning.

This study showed that action research and activity theory can be productively combined together in the methodology of the Change Room and the study has confirmed that action research is a successful approach to teachers' professional development and for creating new knowledge about practice. The study has also provided valuable insights into the learning processes involved in teachers' action research and how it can enhance their agency to change their practice with focus on the object of student learning and enable them to develop cross curriculum agency. Action research is on individual level but in the Change Room action research is utilised to encourage changes at group and school system level. The study had a very beneficial influence on the participants' classroom practice and is an example of the positive effects it has on practice when teachers work together and identify and tackle problems by researching their own practice.

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APPENDICES

Appendix 1: Planned changes in Sjárvarsíðuskólinn that were not implemented

In 2006 Sjárvarsíðuskólinn decided that it was time to consider new ways to develop its traditional class based system into a more flexible system that would allow students to organise their learning at their individual study level. A group of professional leaders in the school went on a study tour to Denmark in the autumn of 2006. This experience influenced their views in many ways for example towards teachers cross curriculum co-operation and assessment for learning (Vilhjálmsson, 2006). During the school year 2007 - 2008 four groups of teachers examined and wrote reports on different possibilities i.e. a system of eight week periods, a mixed system of course and class system, a distance and localised learning, move between school levels (Ásgeirsson, 2008; Knútsdóttir & Guðjónsson, 2008; Thorarensen, Vilmundarson, & Hilmarsson, 2008; Thorvaldsson & Torfadóttir, 2008). In the spring semester 2008 these ideas were discussed further and the conclusion was to develop the idea of a system of eight week periods further. The new system was to be based largely on courses that lasted for eight week periods. This system would be more flexible than the present class based system and would enable Sjárvarsíðuskólinn to organise students' learning at their individual study level. Two to four courses should be taught over the whole school-year, each for three 40 minutes lessons per week and eight courses for eight week periods, twelve 40 minutes lessons per week. Each period lasting eight weeks, total of four periods over the school-year (Vilhjálmsson, 2010). The aim is to create a more flexible system and also a learning space for learning by doing with increased emphasis on learning through project work, group work and field trips but at the same time to keep the positive social aspect of the traditional class system (Vilhjálmsson, 2010).

In a survey among the staff in May 2008, 67% were very or rather in favour of the idea of developing the eight week periods system in connection with the class based system, 19% were neutral and 14% rather or very much against it (Thorgeirsdóttir, 2010d). During the school-year 2008 to 2009 these ideas were discussed and developed further and in the spring 2009 it was decided to carry out

an experiment with the eight week periods system in the school-year 2009-2010. The experiment was carried out in three subjects, English, Geology and Sociology with four first year classes of the social science department. The aim was to develop the system during this school-year and put it into full action in the autumn semester 2010. The experiment gave promising results, similar average students' grades in each subject as for the last four years before that and both teachers and students gave positive feedback. The evaluation revealed for example that the new periodic system demands more variation both in teaching and assessment methods, it gave time and space for more study field trips and it demanded steady workload of students as each period lasted only eight weeks (Thorgeirsdóttir, 2010d). But as is described in the evaluation report there are also things to consider and develop further as the system demands a lot of preparatory work for teachers, assessment of students' projects is time consuming and the teachers felt that the system is better suited for students who are interested in their studies and in good health than other students (Thorgeirsdóttir, 2010d).

At the same time the staff of Sjárvarsíðuskólinn were developing a new school curriculum for Sjárvarsíðuskólinn that should also be put into action in the autumn of 2010 at the same time as the new system of eight week periods. This new curriculum should provide a matriculation examination for 220 credits distributed on three and a half years instead of four years at present. The emphasis was on students' understanding of nature, culture and history and project based learning. Two new study lines were created called the nature line and society line. These were to substitute three previous lines of study. The new study lines were supposed to give students more choice and responsibility for the planning of their studies (Thorgeirsdóttir, 2010c).

But this new system of eight week periods and the new school curriculum was not implemented in 2010 as planned because firstly the Icelandic Parliament postponed the full implementation of the new Upper Secondary School Laws from 2008 until 2015 as described earlier and secondly because the pay negotiation between Sjárvarsíðuskólinn and the Icelandic Teachers Union stranded in the summer 2010. Sjárvarsíðuskólinn offered 6,4% wage increase but the Teacher

Union demanded at least 10% pay increase and the teachers at Sjárvarsíðuskólinn stood firmly behind their union. The dispute between the state and the Teachers Union over pay agreements and the new definition of teachers work was not solved until April 2015 and it is uncertain if the new system of eight week periods will be implemented in the near future and the new school curriculum will not be fully implemented until the autumn 2016.

This influenced the action research group in the Change Room in the autumn 2010 as the group ceased to have a common aim to change the teaching practice in order to adapt to a new system and a new curriculum. The teachers were suddenly no longer preparing their action research projects for the new system of eight weeks periods and a new school curriculum but the old class system in the old school curriculum. Instead of having individual projects as a response to changes at system level decided top down we had individual projects decided bottom up. In the background there was though the fact that these changes continued to be the school's aim but would not be put into action until later. The standstill had more impact on some teachers than others because some teachers do most of their teaching in the first year classes and they were especially affected as they were preparing to start in the new system in the autumn of 2010.

This also influenced the spirit in the staff group in general in the autumn semester of 2010, the school leaders perhaps more than the teachers because this had been their main aim of the school for some years.

Appendix 2: Certificate of ethical research approval

STUDENT HIGHER-LEVEL RESEARCH



Graduate School of Education

Certificate of ethical research approval

STUDENT RESEARCH/FIELDWORK/CASEWORK AND DISSERTATION/THESIS

You will need to complete this certificate when you undertake a piece of higher-level research (e.g. Masters, PhD, EdD level).

To activate this certificate you need to first sign it yourself, and then have it signed by your supervisor and finally by the Chair of the School's Ethics Committee.

For further information on ethical educational research access the guidelines on the BERA web site: <http://www.bera.ac.uk/blog/category/publications/guidelines/> and view the School's statement on the 'Student Documents' web site.

READ THIS FORM CAREFULLY AND THEN COMPLETE IT ON YOUR COMPUTER (the form will expand to contain the text you enter). **DO NOT COMPLETE BY HAND**

Your name: Hjordis Thorgeirsdottir

Return address for this certificate: Lokastigur 17, 101 Reykjavik, Iceland

Degree/Programme of Study: 4 year doctoral studies PhD

Project Supervisor(s): Keith Postlethwaite and Nigel Skinner

Your email address: ht252@exeter.ac.uk and [hjoridist@msund.is](mailto:hjordist@msund.is)

Tel: mobile +3548975345, home +3545515345, work +3545807300

I hereby certify that I will abide by the details given overleaf and that I undertake in my dissertation / thesis (delete whichever is inappropriate) to respect the dignity and privacy of those participating in this research.

I confirm that if my research should change radically, I will complete a further form.

Signed: Hjordis Thorgeirsdottir date: 18.11.2009

Certificate of ethical research approval

Your student no:

580030459

Title of your project:

Change Laboratory and action research in a college in Iceland: An action research and a case study.

Brief description of your research project:

The aim of the research is to connect together "change laboratory" and action research to enhance the professional learning community in a college in Iceland. I will firstly do an action research that involves a change laboratory with the action research group in the college and secondly a case study of that action research group.

From the standpoint of the action research the Change laboratory will serve as the first steps in the action research cycle of observing and reflecting on the practice. From the standpoint of the Change laboratory the action research of the group will serve as the experimental phase of the change laboratory where proposed changes in classroom practice will be tried out and evaluated. In this phase of the research I will use video recordings of six group meetings in the Change laboratory that will be transcribed and used as documents of minutes of meetings. I will also conduct interviews with three teachers who participate in the Change laboratory, discuss the research findings with my critical friend, use a research diary and I aim for intersubjective working agreement with the action research group on the interpretation of the main findings.

In the case study the aim is to find out if the influence of action research on teachers is similar in Iceland as in other countries on their working methods and attitudes towards their job. Little attention has been paid to the influence of the school's culture on the action research process. In this case study the influence of the action research community and the school's culture on the action research process will be investigated. In the case study I will use six different methods of data collection: Interviews, observations, focus groups, survey, documents and a research diary.

Give details of the participants in this research (giving ages of any children and/or young people involved):

- 1) Participants in the action research group in the college, between 14 and 20 people. They will take part in the meetings in the Change Laboratory and answer a questionnaire about their action research projects and experience in the Change Laboratory.
- 2) Three teachers in the action research group will be interviewed four times. Purposive sampling of teachers whom I think I can learn the most from about the process of action research. I will also consider varied background i.e. sex, teaching subjects, teaching experience and views towards action research.
- 3) Students in 3 classes in the college will be observed in their classrooms. The students are 16 to 19 years old. In total between 60 and 90 students will be involved depending on the size of each class. One class will be observed from each of the three teachers whom I interview. The teachers point out the class which is the object of their action research project.
- 4) Students in 3 focus groups, six to eight students in each group 16-19 years old. In total 18 to 24 students from the same classes that I observe. Purposive sampling as I will ask the teacher to point out both enthusiastic and reluctant students and I might also ask for some voluntaries from each class to emphasise my interest in the class rather than particular individual students.
- 5) The whole staff of the college will be asked to answer a few closed questions about the influence of the action research in the school. About 70 people.

Give details regarding the ethical issues of informed consent, anonymity and confidentiality (with special reference to any children or those with special needs) a blank consent form can be downloaded from the SELL student access on-line documents:

I will be following the Graduate School of Education Ethics Policy and the BERA revised ethical guidelines for educational research. I will also follow the ethical guidelines of the University of Iceland for research in Iceland that are very similar to the British guidelines and the Icelandic teachers' ethical code of practice. The ethics of action research lies at the boundaries of the ethics of research and the ethics of practice and therefore I need to take both into account in my research. Issues regarding respect, informed consent and anonymity will be carefully considered as described below.

Respect: The views and perspective of teachers and students will be in the foreground and I will ensure that these are listened to, respected and represented in the meetings and in the findings. I

emphasise this by giving the action research group an opportunity to criticise the conclusions of the study and provide alternative interpretation. I will do the same in the interviews with the three teachers and I will do member checking in the focus groups.

Informed consent: It will be important to obtain informed consent from all the members of the action research group, the three teachers I will interview and the students in the focus groups. Information will be in the letter of informed consent about videotaping of meetings of the action research group and audio recordings of interviews and focus group meetings. Participants will be made aware of how the research findings will be used by the researcher. I consider it sufficient to gain permission from the headmaster both for the classroom observations and the focus groups as the research is directed at classroom practice rather than individual students. The students are old enough to be able to decide for themselves if they want to participate in the focus groups. But if the students in the focus groups will be minor or under the age of 18 then a letter of introduction will be sent home to their parents. Thereby I give the parents an opportunity to let their children withdraw from the focus group.

Anonymity: I have two options; either the school involved and the identity of participants is not revealed to protect their anonymity or I will get a permission from the headmaster and the participants in the action research group to use the name of the school and all the teachers involved in the action research group. I will discuss this matter every year with the group until I finish my research and make a final decision then. In my proposal I will use the term college for the school and not name the participants. In a small community as in Iceland it will be difficult to protect anonymity from people who know the circumstances. People can be identified otherwise than by name. Therefore if I decide for anonymity I need to be very conscious if participants can be identified by gender, teaching subject or teaching experience or the combinations of these factors. If we decide to reveal the identity of the school and participants it will be done in respect for the history of the school and the ownership of the participants of their action research projects under study.

Give details of the methods to be used for data collection and analysis and how you would ensure they do not cause any harm, detriment or unreasonable stress:

Data collection methods:

Qualitative: Video recordings of meetings of the action research group in the Change Laboratory. Informed consent of participants will be asked for beforehand. Four semi-structured interviews will be conducted with three teachers to gain information about the action research process and the influence of the action research on the working methods and attitudes of the teachers. To obtain multiple perspectives I will also conduct classroom observations in three classes of these teachers

and group interviews with students' focus groups from those same classes. With the consent of the teachers and students the interviews will be recorded and transcribed. I will also use a research diary and discussions with a critical friend as data collection methods. This information will be kept in a secure place.

Quantitative: A questionnaire will be used to sample the views of the action research group with their consent. An attitude Likert scale will be used to aggregate the views of the participants and to give frequencies of response to the positive and negative aspects of action research. Participants will also be provided with an opportunity to express their views in their own words. A questionnaire will also be used to sample the views of the whole staff group of the school towards the work of the action research group in the school and its influence within the school. This will be done with few closed questions within the yearly staff survey in the school.

Data analysis methods:

Qualitative: I intend to use NVivo 8 for the storing, organisation and data analysis process of all qualitative data. NVivo will be used to organise the data from different data sources, creating and comparing codes and categories and visualising them in pictures and diagrams.

Quantitative: I intend to use SPSS 15,0 statistical packages for statistical analysis of quantitative information from the questionnaire for the participants in the action research group. This will provide descriptive statistics, including the mean scores, standard deviation and distribution of scores. If questions for the whole staff group of the college will be included in the yearly staff survey as I hope the data analysis will be in the "Namsnet", the inner school web and will provide me with similar information as SPSS.

Give details of any other ethical issues which may arise from this project (e.g. secure storage of videos/recorded interviews/photos/completed questionnaires or special arrangements made for participants with special needs etc.):

NVivo with all the qualitative data will only be stored on my personal computer that will be locked when not in use by me. It will be secured by virus protection. All records of data collected will be stored in a secure and locked place. Information will be coded from the beginning to ensure anonymity and will remain anonymous during the write up of the research. Recordings and questionnaires will be disposed of when no longer required.

Give details of any exceptional factors, which may raise ethical issues (e.g. potential political or ideological conflicts which may pose danger or harm to participants):

I need to take into a special consideration the possible influence of this being an insider research and my dual role as a researcher and a school leader in the college. There is a danger that people will feel unable to refuse participation for not wanting to disappoint or upset me and people may feel

pressure not to question authority. Therefore informed consent and the right to withdraw must be strictly adhered to. Furthermore I need to focus on the action research group rather than individuals and constantly be checking with the group for any misunderstanding.

This form should now be printed out, signed by you on the first page and sent to your supervisor to sign. Your supervisor will forward this document to the School's **Research Support Office** for the Chair of the School's Ethics Committee to countersign. A unique approval reference will be added and this certificate will be returned to you to be included at the back of your dissertation/thesis.


N.B. You should not start the fieldwork part of the project until you have the signature of your supervisor

This project has been approved for the period: 12/09 **until:** complete of PhD

By (above mentioned supervisor's signature):  **date:** 2-12-09

N.B. To Supervisor: Please ensure that ethical issues are addressed annually in your report and if any changes in the research occurs a further form is completed.

SELL unique approval reference: D/09/10/24

Signed:  **date:** 4/12/09
Chair of the School's Ethics Committee

This form is available from <http://education.exeter.ac.uk/students/>

Appendix 3: Letter of reception from the Data Protection Authority in Iceland

Hjördís Þorgeirsdóttir
Lokastíg 17
101 Reykjavík



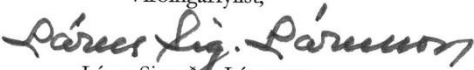
Persónuvernd

Rauðarárstíg 10 105 Reykjavík
sími: 510 9600 brefasími: 510 9606
netfang: postur@personuvernd.is
veffang: personuvernd.is

Reykjavík 15. desember 2009
Tilvísun: S4613/2009/ 1.SL/--

Hér með staðfestist að Persónuvernd hefur móttækið tilkynningu í yðar nafni um vinnslu persónuupplýsinga. Tilkynningin er nr. S4613/2009 og fylgir afrit hennar hjálägt.

Allar tilkynningar sem berast Persónuvernd birtast sjálfkrafa á heimasíðu stofnunarinnar. Tekið skal fram að með móttöku og birtingu tilkynninga hefur engin afstaða verið tekin af hálfu Persónuverndar til efnis þeirra.

Virðingarfyllst,

Lára Sigurður Lárusson

Hjál.: - Tilkynning nr. S4613/2009 um vinnslu persónuupplýsinga.

Appendix 4: Letter of consent of action research group members

A) English

Change Room and action research 2009 - 2011

Participant's consent

I have been informed about the goals and aims of the research.

It is my understanding that:

- I am not obliged to participate in this research. If I participate I am able to withdraw from the research whenever I want to.
- I have a right to deny publication of information that I provide.
- All the information I provide will only be used in this research and that could result in publications of the findings.
- If that will happen then information that I provide can be exchanged between the researchers as anonymous.
- All information that I provide will be treated as confidential information.
- The researchers will try their outmost to insure confidentiality unless the research group decides in writing to publish the real names.
- I give my consent for the meetings of the action research group to be videotaped. The video will be used by the researcher to analyse the data and parts of it shown to the action research group.

Participant's signature

Date

One copy of this document will be kept by the participant and another copy will be kept by the researcher.

The researcher's telephone number is 8975345.

If you like to ask or discuss any aspect of this research please contact: Hjördís Þorgeirsdóttur (hjordist@msund.is).

B) Icelandic

Breytingastofa og starfendarannsókn 2009-2011

Samþykki þátttakanda

Ég hef verið upplýst / upplýstur um tilgang og markmið rannsóknarinnar.

Það er skilningur minn að:

- Ég er ekki skyldug /skyldugur til þátttöku í þessari rannsókn. Ef ég tek þátt get ég hvenær sem er hætt þátttöku í rannsókninni.
- Ég hef rétt á því að hafna birtingu upplýsinga sem ég veiti.
- Allar upplýsingar sem ég veiti verða eingöngu notaðar í þessari rannsókn, sem gæti falist í birtingu niðurstaðna.
- Ef til þess kæmi þá geta upplýsingar sem ég veiti farið á milli rannsakanda í þessari rannsókn undir nafnleynd.
- Allar upplýsingar sem ég veiti verða meðhöndlaðar sem trúnaðarmál.
- Rannsakendur munu leggja sig fram um að tryggja nafnleynd nema rannsóknarhópurinn ákveði skriflega að hafa nafnbirtingu.
- Ég veiti samþykki mitt fyrir því að fundir starfendarannsóknarhópsins verði teknir upp á myndband. Það verður nýtt af rannsakanda við úrvinnslu fyrir rannsóknina og bútar úr þeim sýndir starfendarannsóknarhópnum.

Undirskrift þátttakanda

Dagsetning

Eitt eintak af þessu skjali mun þátttakandi geyma og annað eintak mun rannsakandi geyma.

Símanúmer rannsakanda er 8975345.

Ef þú vilt spyrja eða ræða um eitthvað varðandi þessa rannsókn þá vinsamlegast hafðu samband við: Hjördísi Þorgeirsdóttur, (hjordist@msund.is).

Appendix 5: Letter of consent of students

A) English

**Change Room spring semester 2011
Students' consent for participation spring semester 2011**

I have been informed about the goals and aims of the research.

It is my understanding that:

- I am not obliged to participate in this research. If I participate I am able to withdraw from the research whenever I want to.
- All the information I provide will only be used in this research and that could result in publications of the findings.
- I have a right to deny publication of information that I provide.
- All information that I provide will be treated as confidential information.
- I give my consent for the researcher to take photographs and a video of students working on students' projects in classroom X in Icelandic with teacher XX and at the care home for the elderly XXX and to audiotape students' discussions. It will be used by the researcher when analysing the data and bits of it might be shown to teacher, students and research group.

Participant's signature	Participant's signature
Participant's signature	Participant's signature
Participant's signature	Participant's signature
Participant's signature	Participant's signature
Participant's signature	Participant's signature
Participant's signature	Participant's signature
Participant's signature	Participant's signature
Participant's signature	Participant's signature

_____ Participant's signature	_____ Participant's signature
_____ Participant's signature	_____ Participant's signature
_____ Participant's signature	_____ Participant's signature
_____ Participant's signature	_____ Participant's signature
_____ Participant's signature	_____ Participant's signature

One copy of this document will be kept by the teacher and another copy will be kept by the researcher.

The researcher's telephone number is 8975345. If you like to ask or discuss any aspect of this research please contact: Hjördís Þorgeirsdóttur (hjordist@msund.is).

B) Icelandic

Breytingastofa vorönn 2011 Samþykki nemenda vorönn 2011 fyrir þátttöku

Ég hef verið upplýst / upplýstur um tilgang og markmið rannsóknarinnar. Það er skilningur minn að:

- Ég er ekki skyldug /skyldugur til þátttöku í þessari rannsókn. Ef ég tek þátt get ég hvenær sem er hætt þátttöku í rannsókninni.
- Allar upplýsingar sem ég veiti verða eingöngu notaðar í þessari rannsókn, sem gæti falist í birtingu niðurstaðna.
- Ég hef rétt á því að hafna birtingu upplýsinga sem ég veiti.
- Allar upplýsingar sem ég veiti verða meðhöndlaðar sem trúnaðarmál.
- Ég veiti samþykki mitt fyrir því að rannsakandi taki myndir og myndband af verkefnavinnu nemenda í X í kennslustundum í íslensku hjá XX og í elliheimilinu XXX og taki umræður nemenda upp á tónhlöðu. Það verður nýtt af rannsakanda við úrvinnslu fyrir rannsóknina og bútar úr þeim mögulega sýndir kennara, nemendum og rannsóknarhóp.

Undirskrift þátttakanda

Undirskrift þátttakanda

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Undirskrift þátttakanda

Undirskrift þátttakanda

Eitt eintak af þessu skjali mun kennari geyma og annað eintak mun rannsakandi geyma.

Símanúmer rannsakanda er 8975345. Ef þú vilt spyrja eða ræða um eitthvað varðandi þessa rannsókn þá vinsamlegast hafðu samband við: Hjördísi Þorgeirsdóttur, (hjordist@msund.is).

Appendix 6: Questions for pair interviews about the past

A) English

1. When did you start working in Sjávarsíðuskólinn?
2. What was the work like at that time?
3. What did you bring with you that helped you to work well?
4. In relation to your work, where was power located at the time when you started working here and how was power shared with you?
5. How has Sjávarsíðuskólinn changed during this time?
6. What kind of turning points or phases have been in Sjávarsíðuskólinn since you started working here?
7. How have you changed?
8. How have the issues of power changed?
9. What influence did these changes or phases have on your work and working-environment?
10. Tell me about an example of a positive experience of changes in your work at Sjávarsíðuskólinn? Name one specific incident.
11. Tell me about an example of a negative experience of changes in your work at Sjávarsíðuskólinn? Name one specific incident.

B) Icelandic

1. Hvenær hófst þú störf við MS?
2. Hvernig var starfið á þeim tíma?
3. Hvað komst þú með í starfið sem hjálpaði þér að vinna vel?
4. Hvar var vald til að taka ákvarðanir þegar þú hófst störf og hvernig var því deilt með þér?
5. Hvernig finnst þér Sjávarsíðuskólinn hafa breyst á þessum tíma?
6. Hvaða kaflaskil eða áfangar hafa orðið í Sjávarsíðuskólanum síðan þú hófst störf?
7. Hvernig hefur þú breyst?
8. Hvernig hafa völdin til að taka ákvarðanir breyst?

9. Hvaða áhrif höfðu þessi kaflaskil eða áfangar á starf þitt og starfsumhverfi?
10. Segðu mér frá dæmi um jákvæða reynslu af breytingu í þínu starfi í Sjávarsíðuskólanum? Nefndu eitt ákveðið tilvik.
11. Segðu mér frá dæmi um neikvæða reynslu af breytingu í þínu starfi í Sjávarsíðuskólanum? Nefndu eitt ákveðið tilvik.

Appendix 7: Questions for small group discussions about the present

A) English

1. What are the main tools that you use in your teaching? (Tools can be for example teaching methods, learning methods, assessment methods, instruments, equipments, ideas about teaching and learning).
2. Which tools do you consider to be used too little in practice and which tools do have some faults?
3. What do we do well (that is successful) and you would like to see more of in teaching?
4. What is your opinion on the division of labour in the classroom between the teacher and the student?
5. How do conflicts or contradictions mainly appear in school life in Sjárvarsíðuskólinn today?

B) Icelandic

1. Hvaða verkfæri (kennsluaðferðir, námsaðferðir, námsmatsaðferðir, tæki, tól) notar þú helst í kennslunni?
2. Hvaða verkfæri telur þú vera vannýtt eða gölluð í kennslunni?
3. Hvað gerum við vel (sem skilar árangri) og viljum gjarnan sjá meira af í kennslunni?
4. Hvernig finnst þér verkaskiptingin vera á milli kennara og nemenda í kennslustofunni?
5. Hvernig birtist togstreitan helst í skólastarfinu í Sjárvarsíðuskólanum í dag?

Appendix 8: Questions for interview with participant in case study

A) English

1. Attitudes towards teaching
 - Can you please describe for me your attitudes towards teaching?
 - Can you please describe for me your attitudes towards your students and how they learn?
2. Attitudes towards action research
 - For how long have you practiced action research?
 - Can you please tell me about your action research?
 - Aims, topics, what kind of data, reflection, critical friend, meetings
 - Can you please tell me how action research has influenced your teaching?
 - Can you please tell me how action research has affected you? Your attitudes towards your work?
3. Action research 2010-2011: Generation meet
 - How did you get the idea for this project?
 - What is the aim of the project?
 - Can you please describe the project?
 - What do you think about the start of the project?
 - What are your expectations about the project?

B) Icelandic

1. Viðhorf til kennslunnar
 - Getur þú lýst fyrir mér viðhorfum þínum til kennslustarfsins?
 - Getur þú lýst fyrir mér viðhorfum þínum til nemenda þinna og hvernig nemendur þínir læra?
2. Viðhorf til starfendarannsókna
 - Hversu lengi hefur þú unnið að starfendarannsóknum?
 - Getur þú sagt mér frá starfendarannsóknum þínum?
 - Markmið, viðfangsefni, hvernig gögn, ígrundun, bandamaður, fundir
 - Getur þú sagt mér frá því hverju starfendarannsóknir hafa breytt í þinni kennslu?
 - Getur þú sagt mér frá því hvaða áhrif starfendarannsóknir hafa haft á þig? Viðhorf þín til starfsins?
3. Starfendarannsóknin 2010-2011: Kynslóðir mætast
 - Hvernig kviknaði hugmynd þín að þessu verkefni?
 - Hvert er markmiðið með verkefninu?
 - Gætir þú lýst verkefninu?
 - Hvernig finnst þér verkefnið hafa farið af stað?
 - Hvaða væntingar hefur þú um framhaldið?

Appendix 9: Questionnaire for evaluation of the Change Room

A) English

**Evaluation of Change Room and action research
school-years 2009 – 2011**

Please tick a box with your response to each question indicating how you feel on a scale of “very” (5) to “not at all” (1)

		Very 5	4	Neutral 3	2	Not at all 1
1.	How satisfied are you with your own participation in the Change-Room?					
2.	How valuable did you find the written minutes of meetings?					
3.	How useful did you find the interviews about the past in the Change Room?					
4.	How useful did you find your participation in the group meetings?					
5.	How useful did you find it that the Change Room focused on conflict in the classroom?					
6.	How useful did you find the analysis of action research projects in the activity system?					
7.	How encouraging was your participation in the Change Room for your work on the action research project?					
8.	How influential do you think the work of the action research group has been on school-practice in Sjárvarsíðuskólinn?					
9.	How important do you think action research has been for your professional development?					
10.	How influential has the action research been in changing your practice?					
11.	How satisfied are you with the influence of your action research project in increasing students' outcome?					

12. Please give examples of how you have changed your practice through the process of action research?

13. Please give examples of how your participation in the Change Room has affected your view of your practice?

14. Is there something in the Change Room that we should continue doing in the action research group? () Yes () No () Don't know

15. If yes to question 12: What?

16. What are the positive outcomes of participating in the Change Room?

17. What are the negative outcomes of participating in the Change Room?

18. What have you experienced as the main obstacles in the Change Room?

19. How do you see the relationship between the Change Room and your action research project?

20. In what ways have the meetings of the action research group in the Change room been valuable?

21. What have you learned about your practice through the process of your action research?

22. What have you learned about students through the process of your action research?

23. Are you interested in continuing working with the action research group next school year?

Yes _____ Why? _____

No _____ Why not? _____

24. How might we enhance the impact of carrying out action research in Sjárarsíðuskólinn?

Thank you for your participation.

B) Icelandic

Mat á Breytingastofu og starfendarannsókn í MS skólaárin 2009-2011

Vinsamlegast merkið við þann valkost sem best á við í hverri spurningu
á kvarða frá mjög (5) til alls ekki (1).

		Mjög 5	4	Hlutlaus 3	2	Alls ekki 1
1.	Hversu ánægð/ur ert þú með þátttöku þína í Breytingastofunni?					
2.	Hversu mikilvægar telur þú fundargerðir hópins hafa verið?					
3.	Hversu gagnleg fundust þér viðtölin um fortíðina?					
4.	Hversu gagnlegt fannst þér að taka þátt í fundum hópsins?					
5.	Hversu gagnlegt fannst þér að í Breytingastofunni var athyglinni beint að togstreitu í starfi í kennslustofunni?					
6.	Hversu gagnlegt fannst þér að skoða starfendarannsóknir í starfsemiskerfi?					
7.	Hversu hvetjandi áhrif hafði þátttaka þín í Breytingastofunni á starfendarannsókn þína?					
8.	Hversu mikil áhrif telur þú að starfendarannsóknarhópurinn hafi haft á skólastarfið í MS?					
9.	Hversu mikið vægi telur þú að starfendarannsókn hafi haft fyrir faglega starfsþróun þína?					
10.	Hversu mikil áhrif hefur starfendarannsókn haft á breytingar á starfsaðferðum þínum?					
11.	Hversu ánægð/ur ert þú með áhrif starfendarannsóknar þinnar á betri námsárangur nemenda?					

12. Nefndu dæmi um hvernig þú hefur breytt starfsaðferðum þínum í gegnum
starfendarannsókn?

13. Nefndu dæmi um hvernig þátttaka þín í Breytingastofunni hefur haft áhrif á viðhorf þín til starfsins?

14. Er eitthvað í Breytingastofunni sem við ættum að halda áfram með í starfendarrannsóknarhópnum? () Já () Nei () Veit ekki

15. Ef já við spurningu 12: Hvað?

16. Hvaða jákvæðu áhrif hefur það haft að taka þátt í Breytingastofunni?

17. Hvaða neikvæðu áhrif hefur það haft að taka þátt í Breytingastofunni?

18. Hvaða hindranir upplifðir þú helst í Breytingastofunni?

19. Hvernig sérð þú sambandið á milli Breytingastofunnar og starfendarrannsóknar þinnar?

20. Á hvern hátt hafa fundir starfendarannsóknarhópsins í Breytingastofunni verið gagnlegir?

21. Hvað hefur þú lært um starf þitt í gegnum ferlið við starfendarannsókn þína?

22. Hvað hefur þú lært um nemendur í gegnum ferlið við starfendarannsókn þína?

23. Hefur þú áhuga á að halda áfram þátttöku í starfendarannsóknarhópnum á næsta ári?

Já _____ Hvers vegna? _____

Nei _____ Hvers vegna ekki? _____

24. Hvernig gætum við aukið áhrif starfendarannsókna í Sjávarsíðuskólanum?

Takk fyrir þátttökuna.

Appendix 10: Questions in Sjárvarsíðuskólinn's staff survey in 2011 concerning action research

A. English

Do you consider that action research in Sjárvarsíðuskólinn has had a positive or negative impact on the school practice?

- Very positive impact
- Rather positive impact
- No impact
- Rather negative impact
- Much negative impact

Do you have a great or small interest in taking part in the action research group in Sjárvarsíðuskólinn?

- Very great
- Rather great
- Don't know
- Rather small
- Very small

B. Icelandic

Telur þú að starfendarannsóknir í Sjárvarsíðuskólinn hafi haft jákvæð eða neikvæð áhrif á skólastarfið?

- Mjög jákvæð áhrif
- Frekar jákvæð áhrif
- Engin áhrif
- Frekar neikvæð áhrif
- Mjög neikvæð áhrif

Hefur þú mikinn eða lítinn áhuga á að taka þátt í starfshópi um starfendarannsóknir í Sjárvarsíðuskólinn?

- Mjög mikinn
- Frekar mikinn
- Veit ekki
- Frekar lítinn
- Mjög lítinn

Appendix 11: Active learners. Summary of group discussion at a teacher meeting on the 20th of October 2010

English

What does active learning mean?

- Taking part in classroom activities.
- The student takes responsibility of his studies.
- Positive and creative criticism.
- Students ask questions.
- Ignite interest and students show it through participation.
- Students use both hand and mind when studying.
- Students take initiative and are able to fill the gaps that teachers leave behind.
- Active is the opposite of passive. A passive student is feed.

How can we make students more active in their studies?

General: Emphasis on varied teaching methods and two way communication. Students ownership of their learning. Set learning aims in collaboration with students. Create learning-spirit, a mode and respect for learning. It is a lot of work involved in increasing students' active learning.

Put the student in focus: Move the responsibility of learning over to the students. To move power over to the students and let them finish the work. Let the students feel that they should have an opinion on their learning. Appeal to that they have a voice and thereby they will take action regarding their learning.

The surroundings: Utilise the environment of the school and the students' personal circumstances. Connect the studies with their daily life. Virtual reality - connect learning with their reality, their world of experience, their interests. Create a learning environment that gives the students' an opportunity for "aha" experience. Create a learning environment where the students see that it is in their best interest to be an active learner.

Examples of methods:

Discussions	Research work	Introductions
Group-work	Project – work	Speakers competition
Experiments	Peer instruction	Visual arts
Visits	Field-trips	Dramatic expression
Writing abstracts	Crossword puzzle	Cooperative learning
Participants lectures	“Cheating” notes	Role playing
Exams	Peer assessment	Discovery learning
Students run, walk or swim 800 meters.	Answer verbal questions in class (throw ball)	Creative assignment
Quiz	Ask questions	Speakers

Leiðir til að virkja nemendur í námi sínu

Niðurstöður umræðna í hópum á kennarafundi 20. október 2010

Hvaða er átt við með að virkja nemendur?

- Taka þátt í kennslustund.
- Nemandinn tekur ábyrgð á námi sínu.
- Jákvæð gagnrýni og skapandi.
- Fá nemendur til að spyrja spurninga.
- Kveikja áhuga og nemendur sýna hann með því að leggja eitthvað til málanna.
- Láta nemendur nota hug og hönd við námið.
- Nemandi hafi frumkvæði og geti fyllt í eyður sem kennari skilur eftir.
- Virkni er hið gagnstæða við óvirkni. Óvirkni = nemandi mataður / lætur mata sig.

Hvaða leiðir getum við farið til að virkja nemendur í námi?

Almennt:

Fjölbreyttar kennsluáðferðir. Tvístefnumiðlun. Eignarhald nemenda á náminu. Setja markmið með nemendum. Skapa námsanda, hugfar, virðing, velja nám. Mikil vinna að virkja nemendur.

Nemandinn í brennidepli: Færa ábyrgðina yfir á nemendur – sleppa taumunum og treysta þeim að klára málin. Leyfa nemendum að finna að þau eigi að hafa skoðun á efninu. Höfða til þess að þau hafa rödd og þar með láti þau sig nám sitt varða.

Umhverfið: Nýta umhverfi og persónulegar aðstæður skólans og nemenda, tengja við daglega lífið. Sýndarveruleiki-tengja námið við þeirra veruleika, reynsluheim þeirra, áhugamál þeirra. Skapa umhverfi sem gefur nemendum tækifæri á „aha“-upplifum. Skapa umhverfi þar sem nemendur sjá sér hag í því að vera virkir.

Dæmi um aðferðir:

Umræður	Rannsóknarvinna	Kynningar
Hópvinna	Project – vinna	Ræðukeppni
Verklegt	Púslaðferðin – jafningjafræðsla	Myndlist
Heimsóknir	Vettvangsferðir	Leikræn tjáning
Útdráttur úr texta	Krossgátur	Samkomulagsnám
Gagnvirkir/þátttöku-fyrirlestrar	Búa til svindlmiða	Hlutverkaskipti
Próf	Fara yfir prófúlausnir samnemenda	Uppgötvunarnám
Láta nemendur hlaupa 800 m, ganga, synda	Svara spurningum munnlega í tíma (t.d. kasta bolta)	Skapandi verkefni
Spurningakeppni	Spurningar	Framsöguerindi

Appendix 12: Participants' action research projects

Appendix 12.1 Sandra and Bjarki. Project work in an optional course.

Here I will describe the action research project of Sandra and Bjarki, Project work in an optional course. The following description is based on Bjarki's presentation on their action research project at a meeting in the Change Room, a teacher story about their project (Kristjánsdóttir & Rasmussen, 2011), an article about this optional course (Rasmussen, 2013) and Sandra and Bjarki's participation in discussions in the Change Room.

Sandra, aged 47, has taught History for 20 years in Sjárvarsíðuskólinn and Bjarki aged 64 has taught Danish for 23 years and been a deputy head teacher for 15 years in Sjárvarsíðuskólinn. Together they created a new optional course for students in third and fourth year. The course was cross curriculum and linked together the two subjects History and Danish around the history of Christian IV king of Iceland and Denmark who ruled from 1588 to 1648.

The optional course on Christian IV evolved around students' project work and a study visit to Denmark where the students lived for a week in the homes of Danish students and worked with them and, in return the Danish students visited Iceland and stayed with the same students later in the year. In their projects the Icelandic students used books and various sources in Danish. The aim of the project was also to encourage the students to look at the history of Iceland from two sides, the point of view of Iceland and the point of view of Denmark. The end products of the students' projects were put on the school's webpage.

This optional course was the teachers' response to their experience of tension between passive and active student learning and a tension between coverage and depth in learning material. It was also their attempt to create a new course developed around students assignment related learning in the spirit of the new school's curriculum (Meeting, 15. 4. 2010; Kristjánsdóttir & Rasmussen, 2011).

They encouraged active and creative student learning through project work and by out of school learning experience, students' boundary-crossing to another territory

and experiencing a new social encounter in a foreign country, Denmark. This was a new learning experience for the students to live for a week in the homes of the Danish students and take part in their family activities in the evenings.

The teachers also hoped that the students would experience the real value of learning that will be long lasting but not only the exchange value through their grades for the optional course. In their report the teachers describe that they found it hard work to get the students to work independently on their projects and the students found it hard to use information sources in Danish. In the end though many of the students felt more confident using the Danish language and were more able to use text in Danish to understand history. (Kristjánsdóttir & Rasmussen, 2011; Rasmussen, 2013).

Bjarki recollected a student's expression:

Cross curriculum cooperation by using methodology from History and reading text in Danish. Danish has now got use value. A student said: "This is really amazing, one is learning something here" (Meeting, 4. 2. 2010).

The students also gave short presentations of their projects to the students from Denmark when the students from Denmark returned their visit and stayed in the homes of the Icelandic students for a week. However, finding Danish too difficult the Icelandic students decided to give the presentation in English.

Bjarki describes:

They had prepared it [the presentation] when they [the guests] arrived but 20 minutes lasted before we got the first group at the blackboard. Then it started to roll and in the end they all finished their presentations (Meeting, 15. 4. 2010).

With the publication of their projects on the school webpage and the students' presentations of their projects to the visitors the teachers hoped that the students' feeling of ownership of their learning had increased and thereby their responsibility for their learning.

Bjarki described how the role of the teacher changed from instructing towards guidance in the project work with students. The students needed to take initiative and do the work and the teachers needed to explain the process how to do the work and answer questions from the students (Meeting, 15. 4. 2010).

Bjarki and Sandra both expressed appreciation for two teachers working together in pairs in the classroom.

Bjarki described:

Interesting to teach with another teacher because disciplinary measures are different, Sandra is so soft. I firmly recommend teaching in pairs, one lenient and the other one not lenient (Meeting, 4. 2. 2010)

Sandra also expressed similar appreciation at another meeting:

We are always both in the classroom in the classes. There is a lot of work for us in assisting them [the students]. We can answer different question and our different strengths are well utilised. We meet regularly on Tuesdays to prepare the course (Meeting, 11. 02. 2010).

Bjarki and Sandra also experienced tension in the optional course as the school's time table was not organised for students' project work. The optional course was taught three times a week for 80 minutes each time and in their experience this was too scattered over the week. Bjarki pointed out that there was a danger that the students forgot what they had been doing in their project between the lessons and would lose connection with the overall picture of the project, especially if they missed a lesson (Meeting, 15. 4. 2010).

In Figure Appendix 12-1, Bjarki and Sandra's action research project is visualised in the activity system of the classroom.

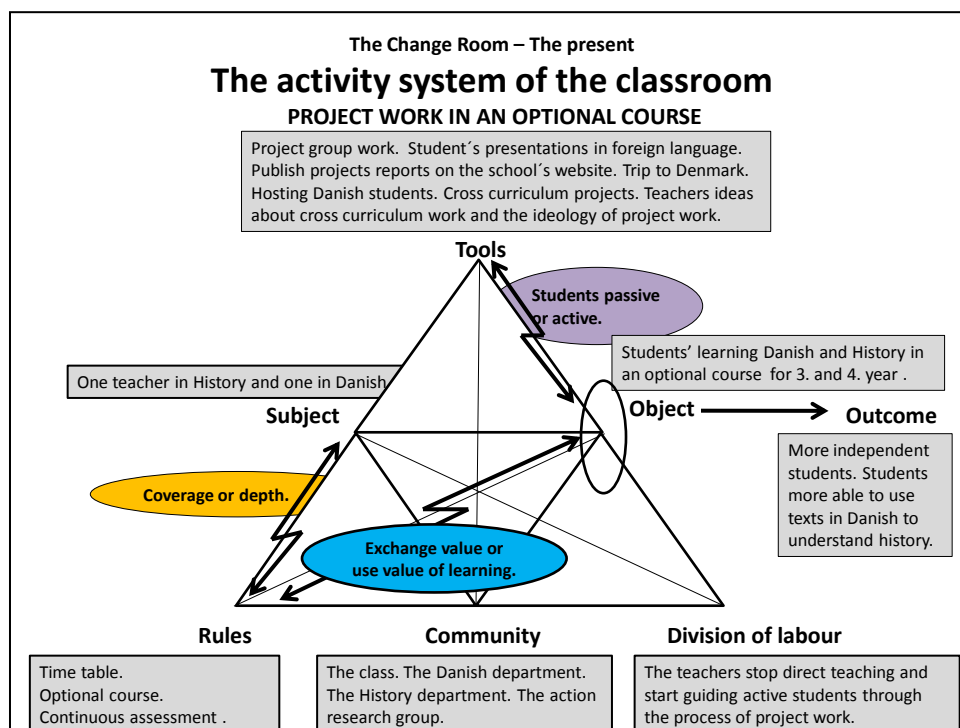


Figure Appendix 12-1 Action research in the activity system of the classroom. Project work in an optional course.

Appendix 12.2 Gunnar. Reading Mathematics

Here I will describe the action research project of Gunnar, Reading Mathematics. The following description is based on Gunnar's introductions of his action research project at meetings in the Change Room, an abstract (Hilmarrsson, 2011a) and power point slides from a presentation at a conference on action research in York in England (Hilmarrsson, 2011b) as well as Gunnar's participation in discussions in the Change Room.

Gunnar, who is a teacher in Mathematics, was aged 54 in 2009. He had a total of 7 year teaching experience at Sjárvarsíðuskólinn, and a teaching experience in other secondary schools for over two decades.

Many students in Iceland experience difficulties grappling with mathematics studies when beginning in the secondary school. At that time mathematics changes its nature from numbers to text. The story I tell is a story of how I – as a mathematics teacher - tried to help some of those students overcome this problem. The problem in short was that these students had learned to think of mathematics as a question of numbers and a matter of a calculation thing. Helping them individually to think instead of mathematics as texts turned out to have a very positive impact. Their grades rose significantly. I have been working as a mathematics teacher for over 30 years. It took me over 10 years to shift from being a problem solving oriented math teacher into a teacher who teach my students to read mathematical texts for themselves: tokens, rules, conceptions and examples. Making students more able to read mathematical texts, I argue, is a key for them to learn to think mathematically and solve textbook problems (Hilmarrsson, 2011a).

This is how Gunnar summarised his development as a teacher in Mathematics in an abstract for a conference on action research in 2011. When the Change Room started Gunnar had been for some year increasing the emphasis on reading mathematics in his teaching. However, he had experienced tension between

himself and the rule in the syllabus of emphasis on mainly doing mathematical exercises but not on reading the mathematical text. He had also been experiencing this as a tension between himself and the community i.e. the Mathematical department. In the autumn 2009 he introduced at a meeting in the Change Room that he had proposed in the Mathematical department a change in the learning semester plan for the first year students and that it had been agreed upon in the department. Gunnar explained that before that, the learning semester plan had mainly been based on enumeration of students' exercises but now the emphasis was on the mathematical content and related reading material in each period of the semester (Meeting, 10. 09. 2009). Another mathematical teacher commented and said that this decision would influence other semester plans in the department (Meeting, 10. 09. 2009). One can conclude that this was the first step towards solving this tension but behind this there is an underlying pedagogical conflict about emphasis in Mathematical teaching on reading and doing Mathematics through solving exercises or learning it mainly by doing Mathematical exercises.

At the same time Gunnar was experiencing other tensions in the classroom i.e. between passive and active participation of the students in the lessons and between one and two way communication. Gunnar wanted to solve these tensions by activating students in the classroom and by moving from dissemination towards getting the students to engage with the textbook and its content.

I have discovered, I feel, this winter I find it hard to communicate from the blackboard where I am supposed to be explaining these concepts and keep up discussions about them. It is fine and good if it works but they [the students] are not listening, they are not taking notes, they are somehow not ready to receive. They prefer to be active and try, I mean to make them actively work with the learning material rather than myself speaking into the air all the time. And I feel this winter I have been changing or my ideas that I should not be so much a disseminator but rather more of a puller, to pull it more through them rather than pour it on them (Meeting, 10. 05. 2010).

He was not only experiencing that the old lecturing method did not work well to activate students' learning but also that some of the students were becoming disruptive and Gunnar had strong feelings about that.

Gunnar describes those feelings:

I feel that the greatest tension in the school practice as it appears in my teaching is that the students are somehow not arriving in the area in order to learn. ... And I feel it hurts as a teacher to have a difficult time to get a peace in the classroom, to be able to do my work (Meeting, 10. 05. 2010).

Gunnar has put a lot of emphasis on reading Mathematics and maintains that it requires a different reading method than with ordinary text. He has created a new concept for reading mathematical text i.e. "shift reading" that is different from the ordinary linear reading in other subjects. In "shift reading" you do not follow the lines but your eyes and attention needs to jump back and forth between places on the page between the symbols in the formulas, graphs and words (Hilmansson, 2011b).

He is happy with his changing emphasis in teaching i.e. on reading and active learning of the students and explains that the failing of the course in the first year has lessen from 30% to under 10% and the students are more satisfied with their studies. Gunnar describes his feelings:

Today I am happy about my work. It is nice to see so many students making beautiful changes. Students are becoming happier, students pass and go on with their good life (Hilmansson, 2011b).

Gunnar has also presented student's nameless answers to questions about their learning experience and following are three examples. These answers reveal that the students are very well aware and conscious of Gunnar's special emphasis on reading Mathematics and that it is different from the methods former teachers in Mathematics have used at the compulsory school level.

Personally I find the examples easier when I read the text first. That is exactly what Gunnar put emphasis on and takes us through. So I am happy with the classes and you learn a lot there. ... Gunnar's way of teaching really worked well in my class and surely many other classes (Hilmarsson, 2011b).

Gunnar wanted us to read the text more and not just to calculate mathematical problems, one doesn't grasp it at first but all the understanding lies in the text and the training in the exercises (Hilmarsson, 2011b).

My grade has increased since compulsory school and I understand the learning material much better since I started reading and learning the model examples. Personally, Gunnar's method suits me very well. Much more fun than to calculate endless examples! My grade is flying up (Hilmarsson, 2011b).

These quotes from the students indicate that they feel positively about the increased emphasis on reading Mathematics but the metacognitive process of discussing how you learn as Gunnar does with his students may have positive impact on students' learning and even encouraging them to take more responsibility for learning Mathematics.

Gunnar's idea of "shift reading" resonates with earlier ideas and strategies about directed activities related to texts, called DARTS put forward by Lunzer, Davies and Green (1984). They developed an idea of 10 types of texts and related recommended DARTS to each type of text i.e. different ways to encourage students to engage with texts (DARTS Information booklet, 2014). Gunnar's idea of shift reading also resonates with ideas about reading for learning in sciences in order to construct meaning from the text put forward by Davies and Green (1984). They do for example suggest students' group tasks where understanding texts is enhanced through discussions followed by individual writing tasks about the same learning material to enable the students to check and show their understanding.

In Figure Appendix 12-2, Gunnar's action research project is visualised in the activity system of the classroom where the tensions are shown in oval shaped boxes and the tools used when trying to solve these tensions through changes in classroom practice and factors influencing that process are shown in rectangle boxes.

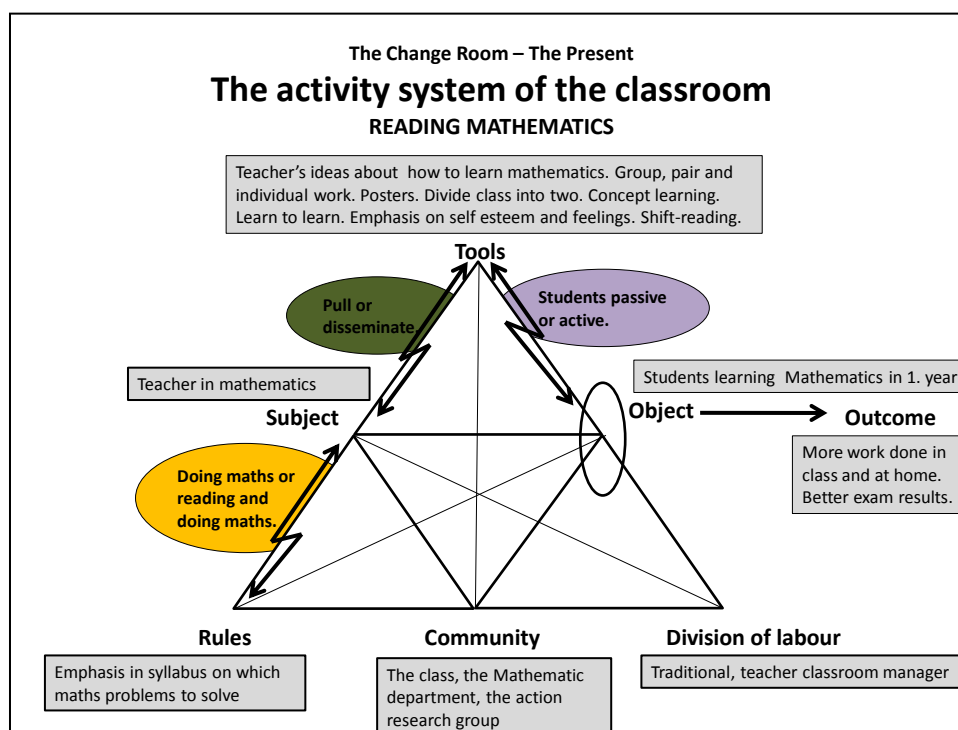


Figure Appendix 12-2 Action research in the activity system of the classroom. Reading Mathematics.

Appendix 12.3 Finnur. English grammar

Here I will describe the planned action research project of Finnur, English grammar. The description is based on Finnur's presentation of his preparation for an action research project at a meeting in the Change Room, and Finnur's participation in discussions in the Change Room.

Finnur, who is a teacher in English, was aged 37 in 2009 and had taught English for 2 years at Sjárvarsíðuskólinn and before that he had a teaching experience both in lower and upper secondary schools.

Finnur was experiencing a tension regarding the teaching of English grammar. In the central curriculum from 1999 grammar teaching in English was moved from the secondary school level to the compulsory school level. The "communication approach" was a dominant approach in teaching of foreign languages in the new central curriculum and according to that approach it is best not to teach grammar directly but it should rather be slowly taken in by the students through practicing the use of the language. Finnur feels that this has led to that the students have not got proper preparation in grammar when they start in the secondary school and therefore the students find it very hard to write an understandable text in English (Meeting 18. 11. 2010).

Finnur wants to introduce again direct teaching of English grammar in the first two years of study in secondary schools through students' grammar exercises and compositions. In order to be able to do that the English department in Sjárvarsíðuskólinn has to agree on it and some other learning elements have to be decreased or moved between school years in the school's curriculum in English (Meeting 18. 11. 2010).

Finnur posed a question "Should we teach grammar?" for all English teachers in schools at compulsory, secondary and tertiary school levels in Iceland through the discussion page of the Society of English teachers so people could air their opinion but also in order to get information about teaching of grammar in other secondary schools (Meeting 18. 11. 2010). Finnur received a lot of different answers both from secondary school teachers and teachers at the University. The great majority

seemed to want to teach English grammar directly but the University teachers also emphasised the need for teaching writing skills at the secondary school level (Meeting, 3. 2. 2011).

Finnur is considering doing a small action research and to try out some grammar exercises in one of his classes and then he can present the result of that to the English department in order to persuade them to take up the teaching of English grammar in the first two years in Sjárvarsíðuskólinn (Meeting 18. 11. 2010).

See Figure Appendix 12-3, where the intended action research project of Finnur is visualized in the activity system of the classroom.

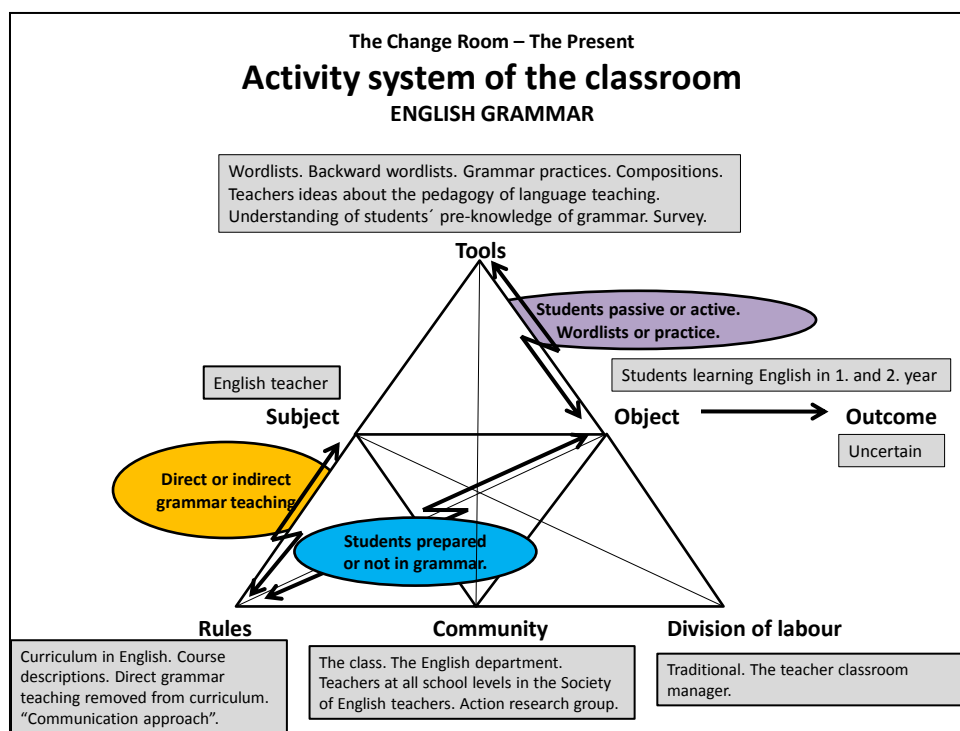


Figure Appendix 12-3 Action research in the activity system of the classroom. English grammar.

Appendix 12.4 Ingunn. Actual attendance

Here I will describe the action research project of Ingunn, Actual attendance. The description is based on Ingunn presentation of her action research project at a meeting in the Change Room, a written report on her action research (Erlingsdóttir, 2011), an article she wrote in the journal *Netla* (Erlingsdóttir, 2012), a presentation at a teacher meeting in MS and Ingunn participation in discussions in the Change Room.

Ingunn, who is a school leader in MS was aged 53 in 2009 and had then been a school leader for 8 years. Before that she had taught Icelandic for a total of 14 years at the school, first between 1981-1983 and then again from 1987. She had also been a student at the school for 4 years for her final exam.

Students' attendance in school is one of Ingunn's responsibilities as the head of teaching. The school's aim is to increase students' attendance because it is a firm belief of the school leaders that there is a positive connection between learning outcome and attendance. This is the case both according to experience built on data from the school and research findings (Hallam og Rogers, 2008; Reed, 2006; Goldstein, Little and Akin-Little, 2003; Sheppard, 2010 as cited in Erlingsdóttir, 2012).

Ingunn explained further:

Research shows that there is a connection between assessment outcome and attendance in school. We know that they do better in most cases if they attend school and they can be led astray into all kinds of trouble if they stop attending school. Hallam and Rogers have written about that (Meeting 24. 02. 2010).

Various measures have been taken in the school through the years in order to increase students' attendance. One of them was taken in 2004 i.e. to calculate students' attendance into their performance grade in each subject for a minimum of 5%. The attendance grade took into account legitimate absence from class, i.e. absence because of sickness or special circumstances that is validated by a certificate from a doctor, parent or another legitimate authority. This new rule led to

a secondary tension between the rules and the community, both teachers and students and the subject, the head of teaching as it created distrust and dissatisfaction with the implementation of the legitimacy of absence from class.

Teachers thought it really twisted to give students who they had rarely seen in class the grade 10 for attendance when calculating the performance evaluation. Students who attended scrupulously resented that students who were rarely seen in class got attendance grade 10 (Erlingsdóttir, 2011, p. 4).

In the spring of 2009 it was decided to change the school rules again and create a new grade for actual attendance that would be calculated in the students' performance grade in each subject. The student needed to be physically present in order to get actual attendance, there were no excuses for absence taken into account and legitimated. The idea of this new rule came from the school-board where school leaders, teachers and students have two representatives each. This new rule was implemented in the school year 2009 to 2010. The students continued to get a special attendance grade at their certificates where legitimate absence from class was taken into account (Erlingsdóttir, 2011).

Ingunn's action research project had the aim to figure out the teachers' and students' attitudes towards this new attendance rule and look at its effects on students attendance and subject's grades (Erlingsdóttir, 2011).

Ingunn found out from the staff survey in the spring 2010 that 81% of teachers were very or rather in favour of continuing with the rule of actual attendance the next school-year. On the other hand 73% of students in the third year were rather or very dissatisfied with the new rule of actual attendance according to a survey conducted in all classes in the third year (Erlingsdóttir, 2011).

Ingunn compared the students' actual attendance grades for the school-year 2009-2010 and what it would have been for the school-year before the new rule was implemented. She found out that the real attendance had increased between these two years as the percentage of students with low attendance grades decreased while the percentage of students with the highest attendance grades increased.

Ingunn explains:

Students in the lowest group (attendance grades 1-3) reduced by nearly 7% and increased by 6% in the top group (attendance grades 8-10), the first year the rule of actual attendance was applied to calculate the students' performance evaluation grade (Erlingsdóttir, 2011, p. 20).

Ingunn received, from three teachers, information about grades and attendance rates in three subjects, Danish, Icelandic and Physics, in the autumn semester of 2009. Ingunn concluded that actual attendance influenced the grades of some of the students' and in most cases it led to higher grades (Erlingsdóttir, 2012, p. 8).

Students in the third year were asked an open question about their opinion of the new rule of actual attendance. Many of the students mention that they appreciate that the actual attendance rule leads to less truancy. On the other hand, the students dislike how fast the grade decreases when you are sick. Here are four examples of student's attitudes towards the new rule:

I consider actual attendance in some ways clever, for example it decreases truancy. A big fault with actual attendance is that if you are sick the grade falls and one needs to consider very carefully whether you are ready to be sick or not and that is bad (Erlingsdóttir, 2011, p. 11).

I feel that actual attendance is really bad for me personally. It is not that I often sleep late or appear often too late in class rather the percentage is so quick to decrease (Erlingsdóttir, 2011, p. 10).

The idea behind this system is good, it is not really fair that one who attends all the classes gets the same attendance grade as someone who is often playing truant and brings in sickness slips. But on the other hand one gets very bitter to become sick and fall fast down in grade unwillingly. We are grown up and should be responsible for our own learning so I don't think it should count

more than 5%. And each time someone is late for class should count less (Erlingsdóttir, 2011, p. 9).

I am really uncertain. I think this is bad towards those who are really sick and get absent or I mean lower attendance grade. But this does never the less get the students to attend more classes and not to misuse sickness (Erlingsdóttir, 2011, p. 11).

Ingunn concluded from her data that the new rule of actual attendance had mostly positive impacts and that the teachers were generally satisfied with it but the students were dissatisfied especially with the steep fall down in the actual attendance grade because of sickness. So the new rule had solved one tension between the rules and the community that was most strongly felt in the teachers' community i.e. no more questions about excuses for absence being legitimate or not legitimate. However it had also created a new tension between the rules and the community that was most strongly felt in the students' community, i.e. dissatisfaction with the steep fall in real attendance when sick. Ingunn, being the head of teaching was in caught in the middle and receiving all the complaints over the attendance rules and their implementation, both from the teachers and the students.

Obvious tension is within the group who works and goes down the education path in Sjárvarsíðuskólinn. Teachers are satisfied with actual attendance and want unchanged system but students are dissatisfied and want a change in the grade scale for calculating actual attendance (Erlingsdóttir, 2011, p. 21).

In order to make the new rule on actual attendance more acceptable to students Ingunn introduced an idea of a change in the grade scale for actual attendance at a teacher meeting at the end of May 2010 but that idea was rejected. One year later at a teacher meeting in April 2011 she introduced the findings of her action research project and put forward another idea about a change in the grade scale for calculating actual attendance. That idea was accepted at a teacher meeting in May 2011. In the new scale the first absences count less than before so it takes

more absences to lower the grade but the weight increases with increased absence (Erlingsdóttir, 2012). Further research is needed to find out if this change in the grade scale is diminishing the new tension.

Ingunn put forward and implemented supplementary steps to increase actual attendance during the course of her action research project i.e. to better introduce the attendance rules to students, to enhance the cooperation between the head of teaching and teachers who have supervision with each class, increase letters and meetings with parents of students under 18 years old, and phoning to all students who are absent in the first class in the morning, a project lasting few days at a time (Erlingsdóttir, 2011). These changes Ingunn has made in her practice can be seen as spin offs in her action research project.

In 2011, Ingunn introduced a new idea for future implementation of using peer groups to enhance actual attendance based on an idea from Rosenberg's book *Join the Club* (Rosenberg (2011) as cited in Erlingsdóttir, 2012).

In order to form and manage peer groups in schools to increase students' responsibility and punctuality you need the cooperation of everybody in the school community. The school needs to introduce the idea, create conditions that create interest in such groups and leeway so they can operate. It is important to listen to what students, teachers and other interested parties say about the matter, give everybody an opportunity to get acquainted with the idea and take part in its execution. Schools need to find ways to increase students' interest and find ways to decrease truancy and unexpected student absence from classes. One way is to try out peer groups as a method to change students' views so that truancy becomes unacceptable but punctuality desirable (Erlingsdóttir, 2012, p. 15).

Here Ingunn put forward an idea to increase students' actual attendance, that both requires active participation of students and listening to their voices to get their

ideas about the implementation of peer groups. It remains to be seen if it will be implemented.

Ingunn concludes:

It is of course our role to get them [the students] to participate. It doesn't always work but I want to see more of activation of the students and that they want to come because it doesn't pay off, not to attend class (Meeting, 10. 05. 2010).

In Figure Appendix 12-4, Ingunn's action research project is visualised in the activity system of Sjárvarsíðuskólinn where both the tensions are shown in oval shaped boxes and the tools used when trying to solve these tensions through changes in classroom practice and factors influencing that process are shown in rectangle boxes.

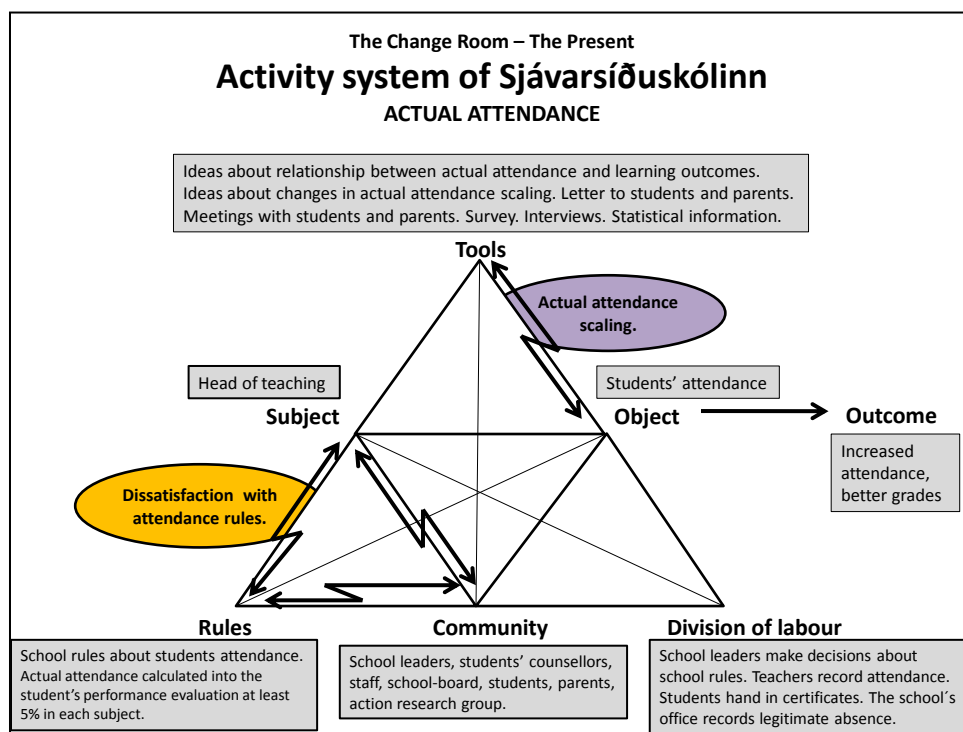


Figure Appendix 12-4 Action research in the activity system of the classroom. Actual attendance

Appendix 12.5 Helena. Students active learners

Here I will describe the action research project of Helena, Students active learners. The description is based on Helena's presentation of her action research project at a meeting in the Change Room, Helena's teacher's story (Gunnarsdóttir, 2011), and Helena participation in discussions in the Change Room.

Helena, who is a teacher in Icelandic was aged 31 in 2009 and had taught Icelandic for one year at Sjávarsíðuskólinn. Helena was teaching students in the second year of study in the language study line. In her action research project she was trying to solve tensions she was experiencing in the classroom i.e. passive students who had not done their homework.

Helena describes the link between her tension and the action research project as follows:

My action research is twofold but both projects relate to the same issue, students' active learning. I don't like certain conditions when teaching in the classroom. My experience tells me and you probably recognize this that when I am giving lectures the students' too often relax in their chairs and take a pause. I also see lack of students' homework as a serious problem. They don't read their schoolbooks at home, they turn up unprepared in class and that violates the prerequisite for covering the teaching material in the class. I am experiencing myself more and more often as a reteller from A to Z (Meeting, 18. 11. 2010).

Helena put the students' material on the school's intra net where all the students could access it as learning material. In the beginning of the project Helena put on the intra net material students found interesting in Helena's lectures and then a student suggested that they would do the same with class assignments and they did. Helena chose material from few students in each lesson to put on the intra net and students could also send her material without being asked for it. Helena pointed out "The students are editing their own learning material". This databank was called "Interesting in the eyes of the students" (Meeting, 18. 11. 2010).

Helena said:

That material became part of learning material for an exam and it had positive effects. Students saw it rewarding to get their name in the databank; it made them proud and had positive effects (Meeting, 18. 11. 2010).

A month later, Helena said at a meeting:

At our last meeting I told you about the students' Databank and now I have given the students an exam. I would like to point out that the exam questions in which I asked directly from material in the Databank gave far the best results on the exam. This is their own and it has so much impact (Meeting, 7. 12. 2010).

Here Helena makes a direct connection between putting the students material on the intra net and better outcome in the exam.

Helena concludes:

I can sincerely say that this approach changed the conditions in my lectures. Those who before were stressed to write everything down became calmer, those who didn't write anything down began to scribble down what moved them and I the teacher now have a good instrument to find out what in the learning material students find interesting (Gunnarsdóttir, 2011).

Another action research project involved students' discussion in lessons. Helena explained that when teaching "Njáls saga" she usually would describe the saga in the lessons and the students would do written assignment about the saga. Helena wanted to increase students' activity in lessons and created the "Court of sagas". Once a week 5-6 students were chosen by the teacher to sit in the court and discuss and answer open questions about the saga. The class played the role of the public in the courtroom and could participate in the discussions and answer questions if those in the court failed to do so. Students did not know beforehand

who would be in the court in each lesson. Helena gave the students immediate feedback about their activity in the Court (Meeting, 18. 11. 2010).

Helena evaluated the “Court of sagas” as a successful method for increasing students’ active participation in the learning process. Most of the students were happy about the discussions and some pointed out that by this method nobody could copy the assignment from a fellow student. However some students felt it strange not to be doing ordinary written assignments and Helena assumed that "she was taking away the safety net for some of the students" (Gunnarsdóttir, 2011).

Helena considers one of the main reasons for the success of the Court to be the atmosphere created in the class.

Helena described:

In the “Court of sagas” I really tried hard to create an informal and comfortable atmosphere where all mistakes were allowed. There was often cheerful and light mood. That was part of the reason why this method worked as well as it did (Gunnarsdóttir, 2011).

Helena conclusion was that this new method of approaching “Njáls saga” through discussions in lessons gave similar learning outcome towards grades as the old method.

So, students really needed to show their competence, responsibility and activity. My students did not do worse on the final exam on “Njáls saga” than did other students this year (Gunnarsdóttir, 2011).

See Figure Appendix 12-5, where Helena action research project is visualized in the activity system of the classroom.

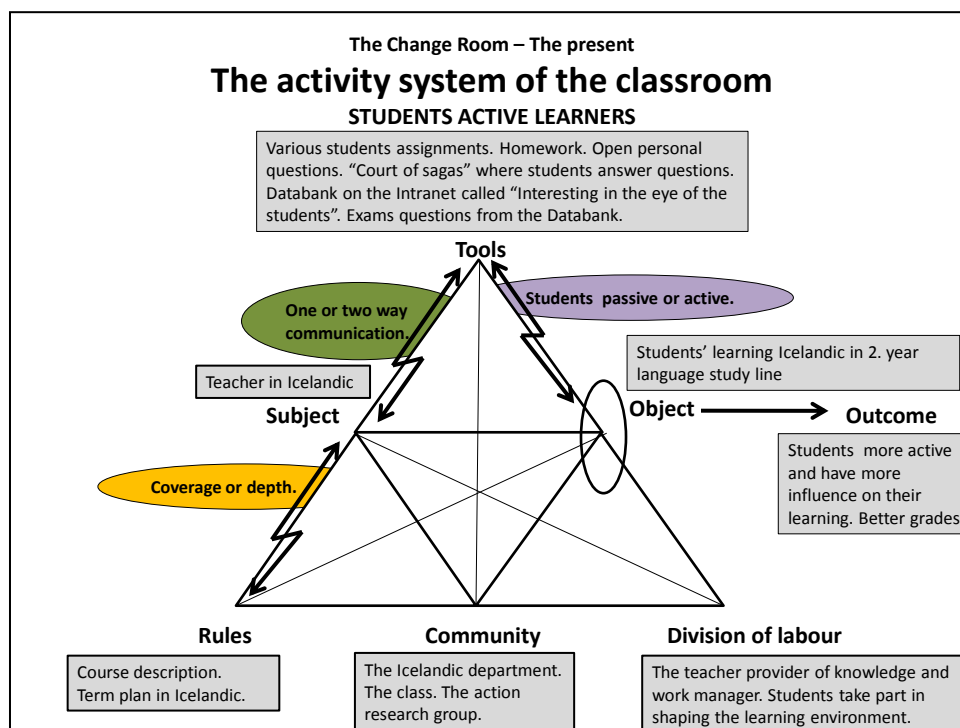


Figure Appendix 12-5 Action research in the activity system of the classroom. Students active learners.

Appendix 12.6 Nanna. Cooperative learning in Biology

Here I will describe the action research project of Nanna, Cooperative learning in Biology. The description is based on Nanna two teacher's stories about her action research projects (Víkingsdóttir, 2011a, 2011b), introduction of her action research project at a meeting in the Change Room and Nanna's participation in discussions in the Change Room.

Nanna, who is a teacher in Biology was aged 52 in 2010 and was in the first year of teaching biology both at Sjárvarsíðuskólinn and second year in another secondary school in Reykjavík. Before going into teaching she had a long experience of basic research in Immunology.

Nanna (50+ Biology 0) is teaching a compulsory course in Biology for first year students. Nanna has the feeling that biology has mainly been taught through lectures and slide shows that the students find "tremendously boring" and find it very difficult to understand abstract concepts of biological phenomena (Meeting, 3. 2. 2011). Nanna is experiencing tension between one and two way communication. She wants to move from the lecture method towards students' group assignments where students are not passive recipients of knowledge but are creative and take active part in the learning process.

Nanna describes her tension:

This one way communication isn't working at all so I am trying out various methods I feel that one really needs to restrain oneself because I have just finished my teachers' training course where I learned about different theories that agree on that one way communication doesn't work but never the less I am up there feeling that I need to tell them everything. One needs to restrain oneself and stop this as it isn't working, to do it somehow differently (Meeting 6. 10. 2010).

In her action research project Nanna tried out various group assignments, for example a learning game on the human body, creative play about the blood system and clay modelling. In one group assignment students created a model of a

cell with all its organs in different colours of clay with name tags for each organ. The assignment ended with a quiz between the groups about the cell in order to encourage all the students to think and learn rather than only writing directly from the textbook (Víkingsdóttir, 2011a).

Nanna also made attempts to introduce cooperative learning in her classroom. CLIM (cooperative learning in multicultural groups) is one of the methods of cooperative learning that Nanna prefers in the classroom because of its creative element, strict time limits and that each participant has a certain role that is necessary to stick to. This enforces all students to be active in the learning process as the outcome of the group work is dependent on contribution of all students. Following the rules all the students are active and there is no longer the problem of “passengers” in the group work i.e. students that are not active and let others do all the work.

She created a group CLIM project about the learning material on the human body. In each group there were five to six students and the assignments are as many as the groups in the class, each evolving around one system of the body’s organ system. Each group works on one part of the assignment in an 80 minutes long class period and as all the groups do all the different parts of the assignment it takes a total of five 80 minutes long class periods to finish the assignment if the groups are five (Víkingsdóttir, 2011b).

Nanna was satisfied with the outcome of her project. She experienced more student participation in the learning process, students becoming more active performers in the classroom and more interested in the subject especially those students that are uninterested and inactive in traditional lectures.

Nanna concluded:

My experience of this assignment is very good. Students consider this work as both useful and enjoyable and often they show great performance in their presentations. Once they become familiar with the working process of this method with its limited timeframe,

they become very active and work purposefully towards finding solutions (Víkingsdóttir, 2011b).

See Figure Appendix 12-6, where Nanna’s action research project is visualized in the activity system of the classroom.

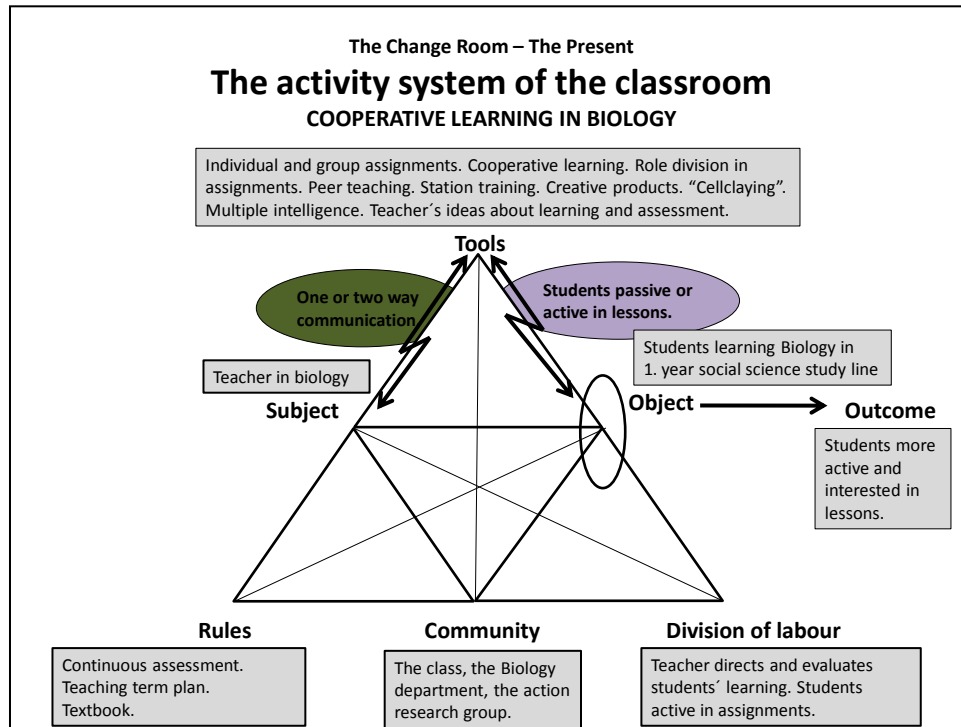


Figure Appendix 12-6 Action research in the activity system of the classroom. Cooperative learning in Biology.

Appendix 12.7 Rakel. Expression but not depression

Here I will describe the action research project of Rakel, Expression but not depression in the teaching subject Icelandic. The description is based on Rakel presentation of her action research project at a meeting in the Change Room, power points slides from that presentation (Torfadóttir, 2010), a teacher story Rakel wrote about her project (Torfadóttir, 2011) and Rakel's participation in discussions in the Change Room.

Rakel, who is a teacher in Icelandic was aged 40 in 2009 and had then taught Icelandic for four years at Sjávarsíðuskólinn.

Expression was taught in a special course in Icelandic for all students in the former general curriculum for upper secondary schools but that course disappeared in the present curriculum from 1999. Expression is now supposed to be a part of learning in courses in all subjects. Rakel experiences tension regarding the lack of time for expression with this new rule or change in the curriculum in Icelandic. Rakel considers it possible to emphasise expression in the course in Icelandic in the Language study line in the third and fourth year. Especially in the fourth year as in that case there are 2 extra classes per week compared to the number of classes in the other study lines. Rakel: "... therefore we had a space to do something else than cover the material in a rush" (Meeting 7. 12. 2010).

Rakel considers it important to teach expression both to enhance the students' competence in this field and to ensure the active participation of all students in expression to solve the tension she experienced regarding student active learning process in expression:

We mainly have students' expression in group work and then usually the same students voluntaries, have you not noticed that? ... Some [students] have approached me and said: "I just can't speak in front of the class, it is not a possibility". I then accept the presentations. They get a lower grade for it but some are really handicapped by this. It is first and foremost the practice that creates the master (Meeting 7. 12. 2010).

Rakel used various students' assignments for learning expression for example voice, respiration and pronunciation exercises, presenting, dramatic expression, creative writing, composing their own poetry and their own short play. The students wrote their own diary at the end of each class that was devoted to expression and the diaries were kept in the classroom. There the students should write about how they felt about each class, what they were learning and if they saw changes in their own conduct as a result of the learning. The students also had one of their presentations videotaped which they watched to learn from it (Meeting 7. 12. 2010).

Both the diaries and video recordings were introduced as student's methods of data collection to enhance their learning process. Rakel emphasised active participation in the learning process of all students and she encouraged the students to become reflective learners and by that she was handing over to them more responsibility for their learning.

Rakel emphasised that her teacher's role was to be a model in expression. She started many assignments by performing herself. Probably it has influenced her that she was very uncomfortable herself with expression when she was in school and university. Rakel explained this also as a model teaching and that she wanted to put herself in the same position as the students:

This model teaching was both meant to some extent to be an example but also to show the students that I was not asking them to do something that I wouldn't want to do myself (Torfadóttir, 2011).

Rakel wanted to connect the expression learning process to another part of the curriculum in Icelandic and asked the students for their opinion about that and the class suggested it would be best to connect it to the history of literature as they found that a very difficult part of the curriculum. Rakel did this but found it rather hard but the students' appreciated it. (Meeting 7. 12. 2010).

Rakel evaluated the outcome by looking at how the students felt about the expression learning process. She concluded that the students were happier and

showed more interest in the learning. She did this by reading the students diaries and she also asked the students to answer some questions at the end of the semester and their answers to these questions were anonymous. All the students except one gave a very positive response towards learning expression and some pointed out which aspects of the learning process worked well.

It is good to get a practice in speaking in front of others and it helps to get a critique, positive and negative (Torfadóttir, 2010).

It is of course always stressful to speak in front of people but it was useful to hear from others what you did wrong for example fiddling with your hair, say often the same cliché: “do you catch it?” “do you understand?” “you know”. Therefore it is also good to watch yourself on a video because often you don’t notice these until you see for yourself your nervous habits (Torfadóttir, 2010).

Only one student was hesitant regarding the usefulness of learning through expression but still he appreciated the wariness it created in classroom practice.

We talked about various matters but I found some of the exercises rather useless. It was on the other hand very enjoyable to get the variation (Torfadóttir, 2010).

The poem composition was favoured both by the teacher and some students. A student wrote in his diary on the 12th of January 2010:

Today we did an assignment in expression and the history of literature that I thought was clever. We composed a poem and introduced it. The poems were joyful and the class was great. It is clever to twist these two together because the history of literature is so boring (Torfadóttir, 2010).

At a similar time Rakel seems to come to a similar conclusion regarding the poems as she wrote in her diary on the 18th of January 2010:

What I thought worked best were the poems composed by the students that they recited in an original way and played with the text in the spirit of the “sound poems” of Eiríkur Arnar (Torfadóttir, 2010).

Rakel likes to carry on developing the teaching of expression in the Language study line and has already decided that she likes to make a change next school-year i.e. 2011-2012. She wants to introduce a special assessment for expression that would have a certain weight in the final grade instead of only letting it weigh in the part of diligence and active learning in general in the course. She plans to assess participation, active learning and self-assessment (Meeting 7. 12. 2010).

See Figure Appendix 12-7, where Rakel action research project is visualized in the activity system of the classroom.

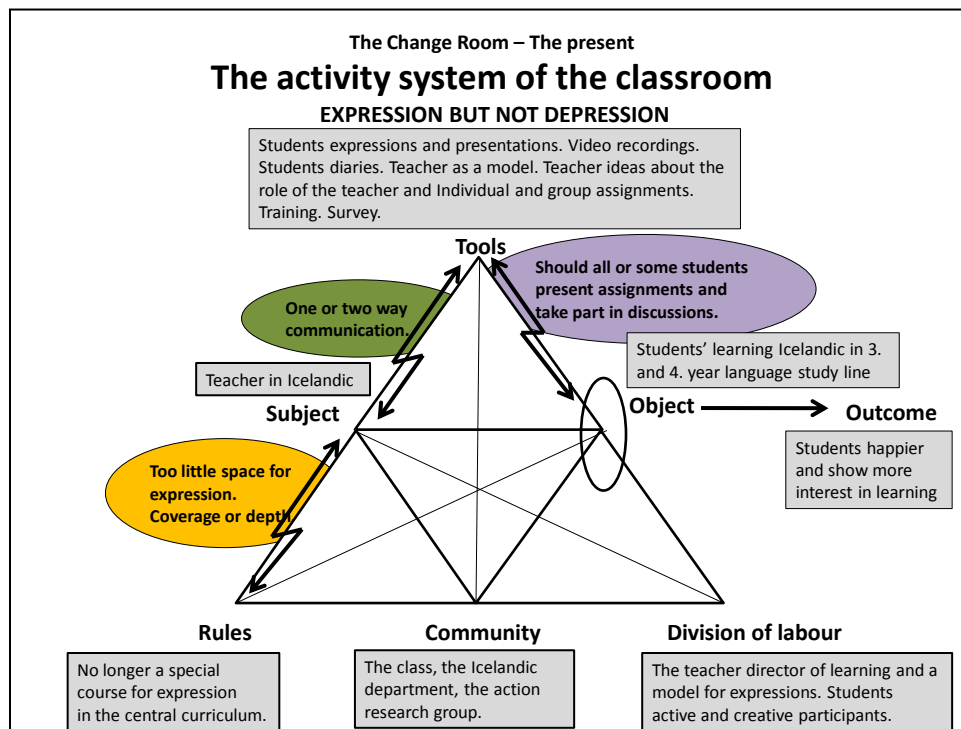


Figure Appendix 12-7 Action research in the activity system of the classroom. Expression but not depression.

Appendix 12.8 Elísabet. Students' attitudes towards Geology

Here I will describe the action research project of Elísabet, Student's attitudes towards Geology. The description is based on Elísabet's presentation of her action research project at a meeting in the Change Room, power points slides from that presentation (Matthíasdóttir, 2011), and Elísabet's participation in discussions in the Change Room.

Elísabet, who is a teacher in Geology was aged 37 in 2009 and had then taught Geology for one year at Sjávarsíðuskólinn.

Elísabet asked in her action research project: What are the students' attitudes towards Geology and how can I influence their attitudes? Elísabet did her action research project with students in two classes in first year in natural science line. In addition she also asked her students from the year before about their attitude towards Geology for comparison.

Elísabet had been using the lecture method a lot with writing notes and drawing pictures on the blackboard that the students were expected to write down. The students are also expected to take active part by participating in discussions during the lectures although she found it hard because of the large class size. Elísabet was also using traditional assessment methods i.e. mostly exams on the grounds that they needed to learn how to do exams and prepare for the final exam at the end of the school-year.

Elísabet describes:

[My] teaching methods have been traditional for the most part. I write notes on the blackboard, write down concepts but I try to have it lively. I try to get them involved in understanding the concepts. ... I try to get them to interpret the concepts. It is not always easy, one needs to have a turn-up. I always have a period when I work a lot with concepts and then I have a power point show, photographs and video of the phenomenon. ... And the assessment. I have a lot of exams in Geology. I have tried to have an exam after each section so they get training in doing exams

because in the end there is a rather big exam, this is a final exam
(Meeting, 31. 03. 2011)

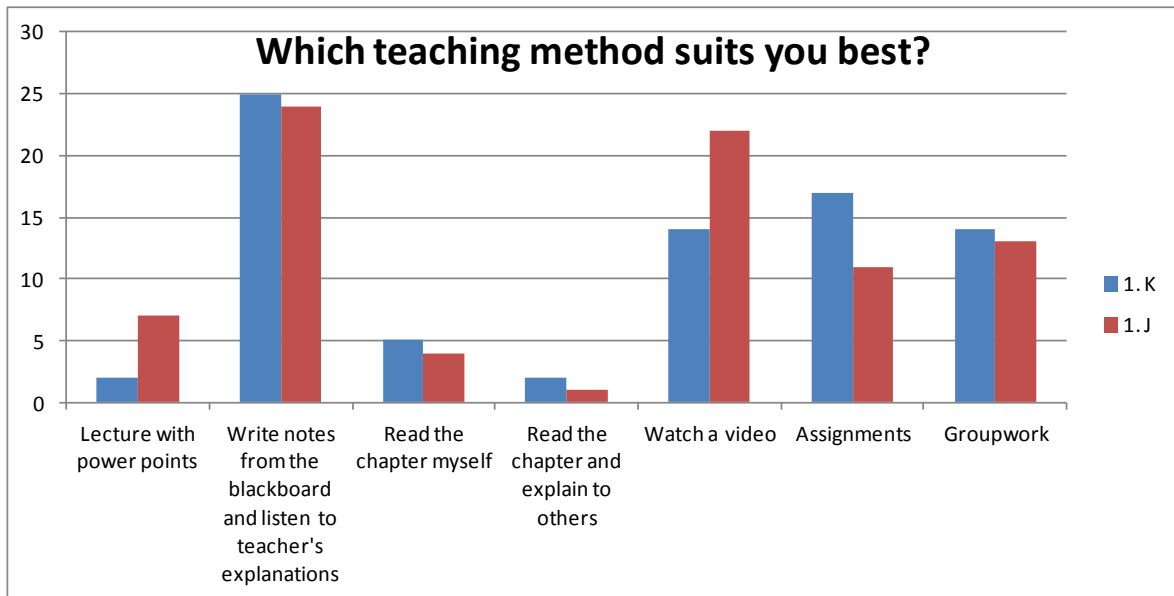
The main emphasis in her action research project in 2010-2011 was to ask the students about their experience and attitudes towards teaching and learning Geology. She taught two classes of 29 students in each class in their first year of study. She used a mid-semester evaluation, a questionnaire with 15 closed questions. It showed that students were most satisfied with their attendance in class, how they felt in class, their notes and the teacher's explanations of the learning material. The students were least satisfied with the workload at home, the assignments and the text book (Matthíasdóttir, 2011).

Elísabet is aware of the students difficulty with reading the text books and that also applies to the notes she writes on the blackboard:

The students complain about the text book, they find it very difficult to read scientific language. They sometimes think I am writing some ancient Icelandic and say: "Wait I need to write a translation with your notes" (Meeting 31. 3. 2011).

Elísabet also asked the students now and then few open and closed questions about their learning experience, for example: How do you learn for exams?; Which teaching method suits you best?; What are my pros and cons? Regarding the teaching methods most students (49 out of 58) said that it suited them best to: Write down notes from the blackboard and listen to the teacher's explanations. Other methods most mentioned were to watch video (36), do assignments from the text-book (28) and group work (27), see Figure Appendix 12-8 (Matthíasdóttir, 2011). Elísabet concluded that the results showed her that the students were satisfied with the teaching methods she most frequently used. Elísabet thought it was an interesting conclusion that the students liked much more to write down notes from the blackboard than a lecture with power points. She discussed that further with her students and the explanation was that they were in better contact with the teacher at the blackboard and better control as opposed to when powerpoints were used then the lights are turned down in the classroom and some

students start talking to each other. Elísabet's main conclusion was that she found most important to use varied teaching and learning methods in each period (two lessons together for 80 minutes) in order to maintain the students' interest and attention (Meeting 31. 3. 2011).



(Matthíasdóttir, 2011)

Figure Appendix 12-8-1 Students attitudes to which teaching methods suits them best.

Elísabet wanted to increase the variation in her teaching methods and getting the students actively involved in the work in the classroom both through classroom discussions in between their note taking and various assignments.

I have been going into it [hands-on demonstrations] little by little. I was reluctant at first, I felt it was a bit strange to use sand, earth, yes and the gravel and milk curds. But it just has appeared that they [the students] find it really exciting and it sticks (Meeting 10. 05. 2010).

During the school year 2010-2011 Elísabet tried out in her action research project new assignments for students for example she let students use quiz to recollect lesson material before exams, to create aids that they could use in their exams and combined an assignment and an exam into one. She also used photographs, videos, experiments and field trips to enhance students' understanding of Geology

(Matthíasdóttir, 2011). Some new ideas from the students were also to be tried out i.e. the students composing exam questions that the teacher could select from, an assignment where students connect together pictures of phenomena and definitions of the concepts of the same phenomena.

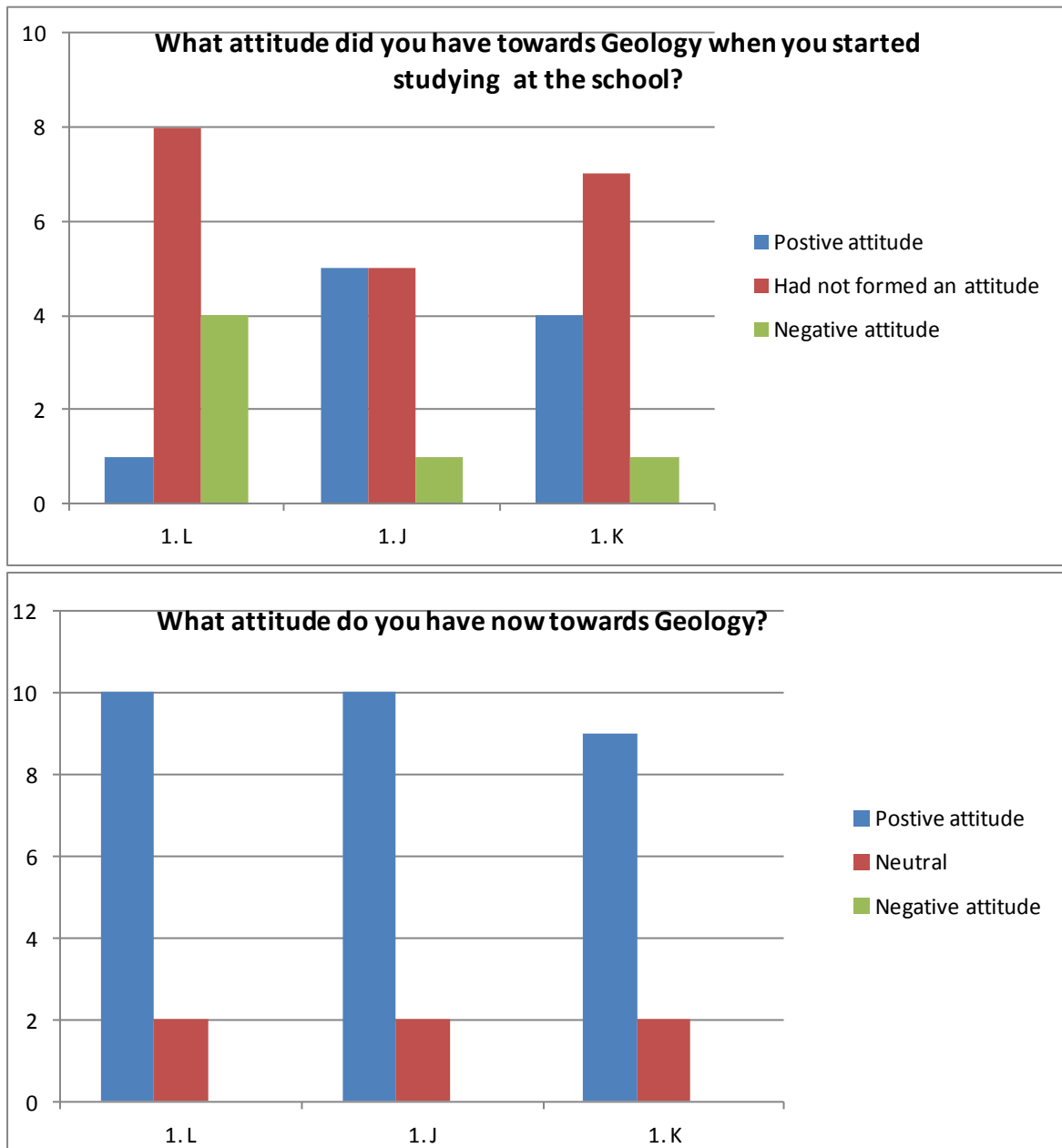
Apart from the students evaluation described above with open and closed questions for students, Elísabet arranged every now and then open discussions in class about the students experience of learning Geology that she found not only informative but also enhancing the class spirit and enabling her to gain better relationship with her students. After reading her diary she concluded:

I wrote down how I experienced the discussions in class and the periods after the discussions. If the discussions evolved around their learning, the learning material, the teaching methods and an opening for ideas, then I felt in the next periods a very positive atmosphere; they were more active. Strange or perhaps not. ... And they greeted me more in the corridors and I felt a mutual respect. I go down to their platform. Ok, what are we going to do about this? How are we to improve? And to discuss it, is something that I think is very important (Meeting, 31. 03. 2011).

Elísabet hoped that the outcome of learning Geology would not only be increased knowledge of the subject but also a change in attitude. She hoped the students would understand how fortunate they are to be living in Iceland with all the exiting Geology and that they would learn to appreciate the Icelandic nature more and look to the mountains when driving around Iceland (Meeting 31. 3. 2011).

Elísabet found out that to some extent she had reached that aim with the students in the school year before. She asked her former students about their attitudes towards Geology before and after they attended the course in Geology. Before the course the majority had not formed opinion but had become more positive after finishing the course in Geology, see Figure Appendix 12-8-2 below. Elísabet also found out that all except one of the students considered that Elísabet had had a lot of influence on their attitudes and explained that for example by a lively, positive,

fun, informative teaching that increased understanding and one students said: “you always put the material into our context” (Meeting, 31. 3. 2011).



(Matthíasdóttir, 2011)

Figure Appendix 12-8-2 Comparison of students' attitudes towards Geology before and after their Geology course in the first study year.

See Figure Appendix 12-8-3, where Elísabet action research project is visualized in the activity system of the classroom.

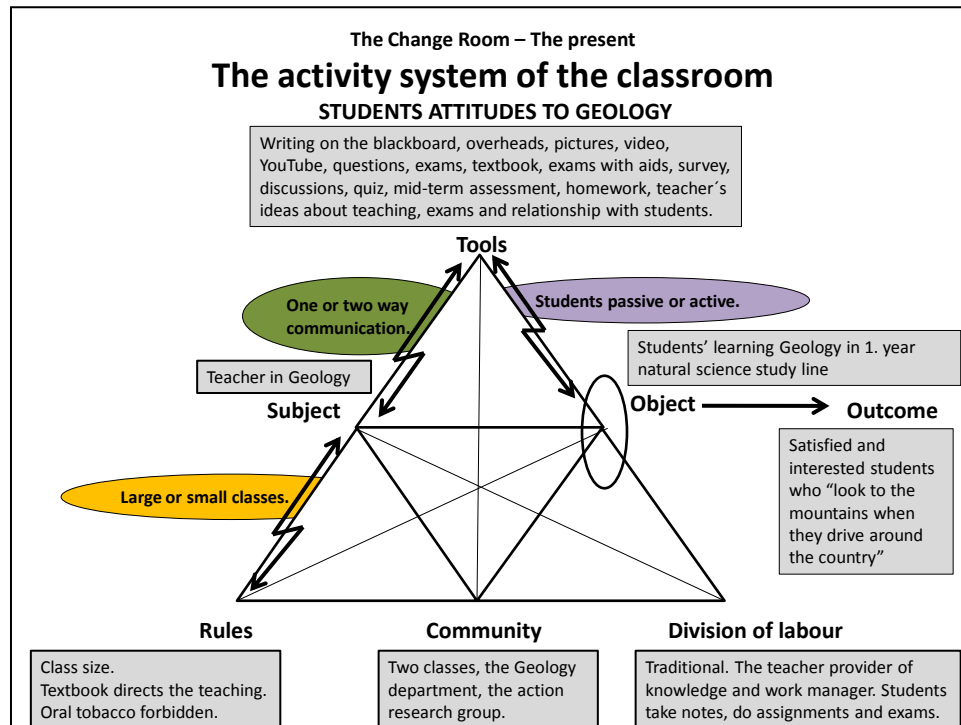


Figure Appendix 12-8-3 Action research in the activity system of the classroom. Students' attitudes towards Geology.

Appendix 12.9 Íris. Assignments in Danish

Here I will describe the action research project of Íris, Assignment in Danish. The description is based on Íris presentation of her action research project at a meeting in the Change Room, and Íris participation in discussions in the Change Room.

Íris, who is a teacher in Danish was aged 56 in 2009 and had then taught Danish for 19 years at Sjárvarsíðuskólinn and before that in two other secondary schools in Iceland.

Íris action research project involved more emphasis on active students' learning in the classroom through assignments and increased consultation with her students about teaching and learning. The students were in the second year and learning Danish for their final exam in the spring semester of 2011.

Íris aim was to enhance students' consciousness about their responsibility for their own learning and increase the students' ambition to get higher grades in the course. Íris had found out through conversations with students and a survey on students' self-evaluation in the year before that some of the students only wanted to pass the course and Íris wanted them to change that attitude (Meeting, 11. 2. 2010). Íris also wanted to increase students' active learning through assignments, especially verbal assignments but according to Íris experience it is always the hardest part in teaching foreign languages to get students to talk in the foreign language (Interview about the past, 7. 12. 2010).

After teaching the class for one month Íris asked the students about their evaluation and ideas about learning and teaching in the course. She gave them nine open question about how the teacher and the students could improve their interest in the subject, the class working spirit, their results and ideas about how to activate students more in the lessons. Íris presented and discussed the results with the students. The students stressed variation in teaching and assignments. They suggested more emphasis on all of the main parts of learning a language, verbal, understanding and writing and all involved their own activities talking, writing and watching and also group work (Meeting, 10. 5. 2011).

She tried to carry out their ideas of variation in assignments and also made a decision with them to create one new large assignment instead of the two small assignments that were on the semester plan. This new assignment involved the students in a group collaborative work that consisted of a written report and a verbal presentation in front of the class. The students could themselves choose the subject for this assignment and were given time in the computer classroom to work on it with assistance from the teacher. Íris concluded that this assistance in the classroom had the effects on less able students that they became more likely to be able to finish their assignments and getting a better outcome (Meeting 10. 5. 2011).

Another new assignment involved the students in finding recent news reports in Danish from Denmark and to read it aloud in front of the teacher in order to practice their verbal competence.

Still another new assignment involved students in cooperative learning about short stories they had been reading in Danish. It was group work with four students in each group with four different roles and all the students had to experience to play all the roles. The project lasted for two weeks.

Íris commented on this cooperative assignment:

Just really great cooperation and more, they [the students] worked much faster than when I am going through the stories with them as one did before. ... They were quick and they had fun (Meeting, 10. 5. 2011).

Regarding the impact on the outcome in the course i.e. on students' grades this emphasis on students' assignments had positive effects according to Íris evaluation, especially the less able students were getting higher grades (Meeting, 10. 5. 2011).

See Figure Appendix 12-9, where Íris action research project is visualized in the activity system of the classroom.

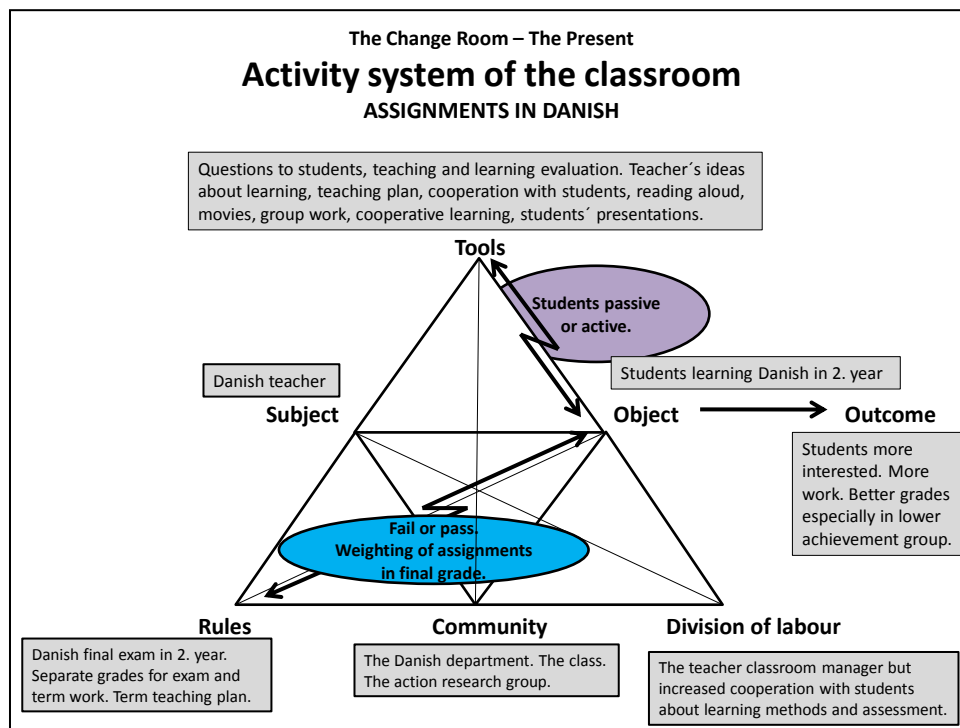


Figure Appendix 12-9 Action research in the activity system of the classroom. Assignments in Danish.

Appendix 12.10 Andrea. Mathematics on Facebook

Here I will describe the action research project of Andrea, Mathematics on Facebook. The description is based on Andrea's presentation of her action research project at a meeting in the Change Room, hand-out from that presentation, a teachers story Andrea wrote about her project (Manolescu, 2011) and Andrea participation in discussions in the Change Room.

Andrea, who is a teacher in Mathematics was aged 47 in 2009 and had then taught Mathematics for 6 years at Sjárvarsíðuskólinn and before that in a secondary school in her home country Romania.

Andrea puts a lot of study material on the school's intra net, i.e. the semester plan, assignments, extra exercises, what material to read for exams, which text books to bring to school, old exam etc. In addition because many students find Mathematics a difficult subject and the textbook hard to read she also puts on the intra net guidelines for learning each week, which definitions and formulas to focus on and notes. Despite this she experienced that the students were coming unprepared for the classes and when she examined the students' activity on the intra net she found out that very few students were looking at the material on the intra net until few days before the final exam of the semester. She wanted therefore to find a way to enhance the communication between herself and the students and increase students' activity on the intra net (Meeting, 10. 5. 2011; Manolescu, 2011).

Andrea created a social network on Facebook for each class she taught. These were closed groups or secret groups where students do not have access to other parts of the other group members' Facebook profile. There she put information about the material she put on the intra net, reminded them of homework and exams and had discussion with students about mathematical issues (Meeting 10. 5. 2011).

Andrea concluded that this arrangement had positive impact; it increased the students' activity on the school's intra net and by that they increased their responsibility for their learning. She summarized the outcome:

This was really effective, it enhanced the information flow between teacher and students and also between the students themselves about their learning and the course. Students became more active on the intra net, they used the additional material more and asked questions regarding the text. I also saw that they were better prepared for the classes (Manolescu, 2011).

Andrea also concluded that the Facebook groups enhanced communication between her and the students, she felt closer to them and that she got to know the students better by following their conversations and commenting whenever she thought appropriate (Meeting, 10. 5. 2011).

One teacher who was listening to her presentation wondered if this took up a lot of the teacher's time but others pointed out that this would probably take less time in the long run than answering individual e-mails from students and this would increase the involvement of the whole class in discussions (Meeting, 10. 5. 2011).

It can be concluded that by creating a learning space on Facebook, Andrea got the students' attention and they together crossed the boundaries of the traditional classroom and entered a new territory for learning. The students spend a lot of social time on Facebook and probably view it as their territory and feel comfortable there. Whatever the students are doing on their phones, pads or computers Facebook is very often open and available to them for communication.

During the same school semester Andrea also introduced a new system to get the students themselves to evaluate their performance in the classroom and she also increased opportunities for her students to explain their work at the blackboard when there was group assignments in class (Meeting, 3. 2. 2011).

See Figure Appendix 12-10, where Andrea action research project is visualized in the activity system of the classroom.

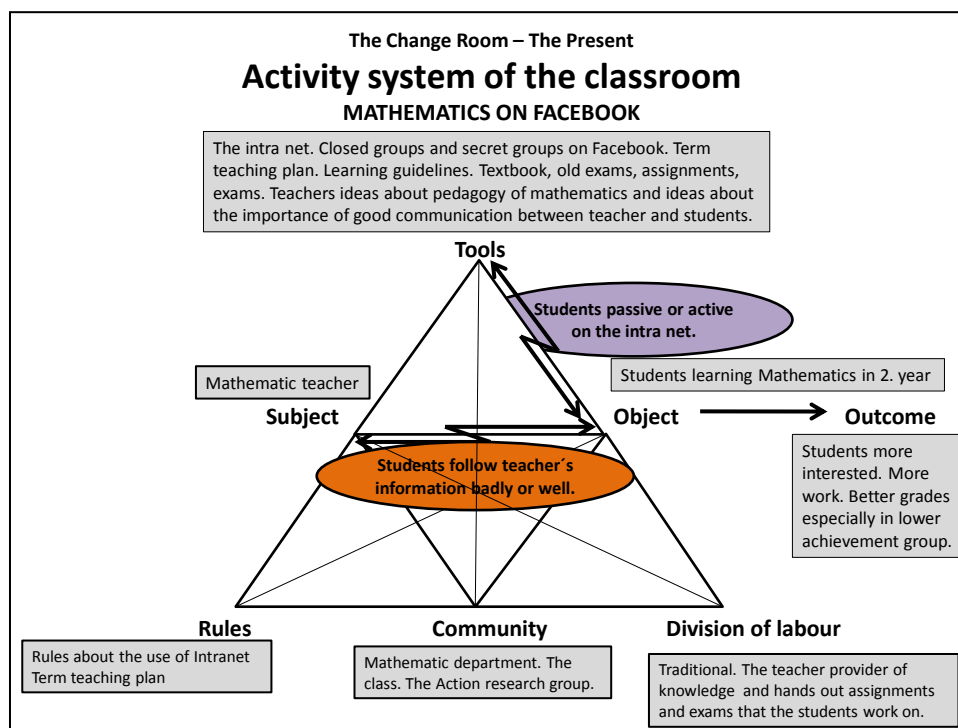


Figure Appendix 12-10 Action research in the activity system of the classroom. Mathematics on Facebook.

Appendix 12.11 Magnús. Experiments in Physics

Here I will describe the action research project of Magnús, Experiments in Physics. The description is based on Magnús presentation of his action research project at a meeting in the Change Room, power point slides from that presentation (R. S. Thorvaldsson, 2010), and Magnús participation in discussions in the Change Room.

Magnús, who is a teacher in Physics was aged 62 in 2009 and had then taught Physics for 8 years at Sjárvarsíðuskólinn and before that in another secondary school in Iceland for 6 years.

Magnús was experiencing tension because of cuts in special lessons for experiments in Physics in second, third and fourth year of studies in the natural science study lines (Meeting, 4. 3. 2010). Two extra lessons per week for experiments had been cut down because of the economic Recession and he was experiencing it harder to cover the material than before (Meeting, 10. 5. 2010).

Magnús action research project was to look at how to develop the experiments in Physics. After the cut down in lessons he decided to keep all the experiments in the course description of the school's curriculum in the semester plan. After the cut down in lessons the whole class performed the experiments at the same time instead of half of the class before the cut down in lessons. Except in a few cases where half the class performed the experiment while the other half worked on assignments in the next classroom (Meeting, 4. 3. 2010).

Magnús was considering what changes he needed to do in the course because of the cut down in lessons, especially the process of learning or the object as he was experiencing a very great workload this year both for him and his students. His focus was on the experiments and Magnús's project involved a survey with open and closed questions towards experiments in Physics among all the students in Physics in the natural science study line (Meeting, 4. 3. 2010).

Magnús main conclusions from the survey were firstly that he could increase the weight of demonstrations but absolutely not replace them totally for experiments that students carry out themselves. Secondly although students consider some

aspects of working on the reports of experiments complicated, especially mathematical processing, such work enhances their understanding of Physics. Thirdly, students consider that they can apply what they learn from doing reports in Physics in other learning subjects and therefore they are able to transfer their knowledge, for example the use of computer in making graphs and to draw conclusions from and processing numerical information (R. S. Thorvaldsson, 2010).

Magnús pointed out that there were many contradictions in the students answers and gave an example:

Students want to skip work in relation to making reports on experiments but nevertheless they consider that experiments help them to connect together theory and practice. One student said: "This was a very enjoyable experiments but it would have been even more enjoyable if we had carried it out ourselves" (Meeting, 4. 3. 2010).

Magnús described that it was hard to get the students to hand in the reports on the experiments although the students thought they learned a lot from doing the reports. It is likely that there is a tension here between the exchange value of learning and the use value of learning. Students were probably dissatisfied with the weight of the reports in the final grade for the course as each only weighted 2-3% but required a lot of work. This is likely to have created tension between him and the students although that was not discussed at the meeting or in his presentation of the results of the survey (Meeting, 4. 3. 2010).

The main changes Magnús decided he would do in his teaching following the survey were to change some of the experiments into exhibition experiments and to increase the weight of the reports of experiments, especially in the fourth year of study (Meeting, 18. 3. 2010).

See Figure Appendix 12-11, where Magnús action research project is visualized in the activity system of the classroom.

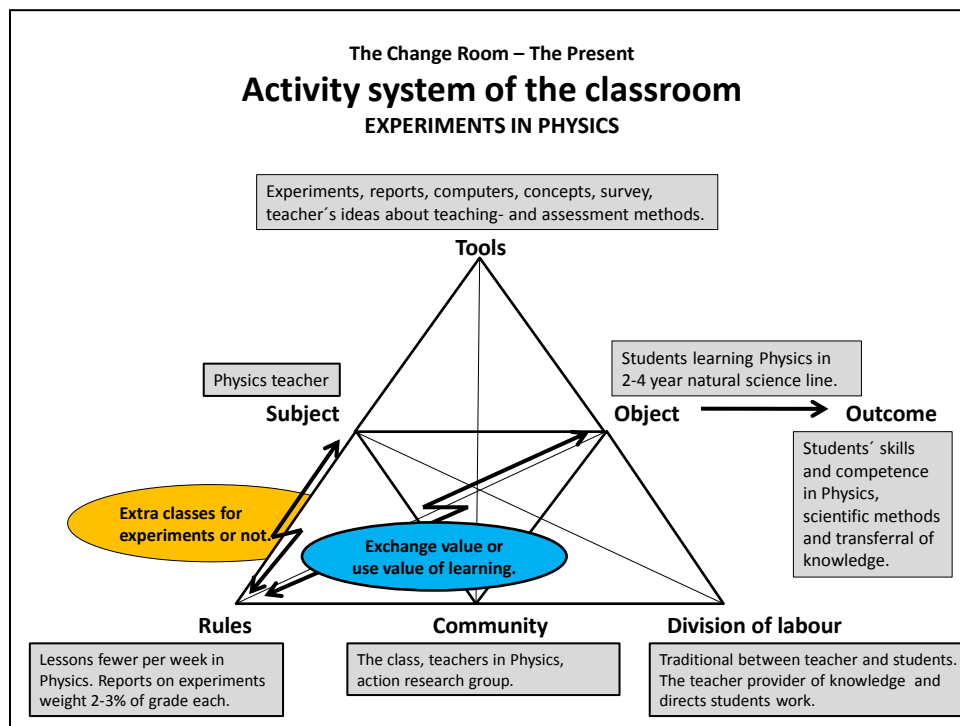


Figure Appendix 12-11 Action research in the activity system of the classroom. Experiments in Physics.

Appendix 12.12 Oddur and Katrín. Preparation for a new school curriculum in Chemistry

Here I will describe the action research project of Oddur and Katrín, Preparation for a new curriculum in Chemistry. The description is based on their presentation in the Change Room, power point slides from Oddur's presentation at a teachers' conference in Reykjavík (Guðjónsson, 2009), power point slides from Oddur and Katrín's presentation at a meeting of the Society of teachers in natural sciences in Iceland (Guðjónsson & R. Hrólfsdóttir, 2010) and power point slides from Oddur's and Katrín's presentation on experiments at a meeting of the group in continuous education for teachers in natural sciences (Guðjónsson & R. Hrólfsdóttir, 2010).

Oddur, who is the head of the Chemistry department and also the head of the natural sciences in Sjávarsíðuskólinn was aged 53 in 2009 and had then taught there for 7 years. He also had teaching experience in another secondary school and at the university level. He had been a student at Sjávarsíðuskólinn for 4 years for his matriculation examination. Katrín, who had taught Chemistry and Biology for 2 years at the school was 26 years old in 2009 and was then also studying for her master degree in Biology and Teaching alongside her work.

During the school year 2009 to 2010 Oddur and Katrín were preparing to implement in Chemistry the new curriculum for secondary school that was to be enforced in the autumn 2010. The implementation was postponed until autumn 2015 as was explained in Appendix 1.

Oddur's and Katrín's action research project was threefold, firstly creating new course descriptions in Chemistry, secondly adjusting the students' experiments in Chemistry to the new learning standards and thirdly trying out a new assessment method in Chemistry, the student learning portfolio. They were among the first departments in the school to start the preparation of the new course descriptions so they were asked to introduce their work not only in the action research group but also to the teachers in the natural sciences, the whole staff group in Sjávarsíðuskólinn and for teachers in the Society of teachers in the natural sciences.

Oddur and Katrín described how the emphasis in learning and assessment would change with the new general curriculum for the secondary school level. They also described the new guidelines for creating new course descriptions in each subject. The learning aims should be defined and categorised in three areas of learning standards i.e. students' knowledge, skills and competence. Within each area of learning standard, the object is to create learning aims that involve accumulation, analysis and communication. Then the next step is to classify each learning aim at one of the four levels of learning competence. The first learning level is general knowledge, the second learning level a certain specialisation, the third learning level specialisation and the fourth learning level very great specialisation. Finally when all the learning aims have been classified, then it becomes clear at what learning level each course is classified, as 75% of the learning aims need to be at the same level for the course to be classified at that level. These new standards were based on the European Qualification Framework (EQF) (Meeting, 7. 12. 2009).

There was a tension around this new concept: students' competence that was defined as the ability to utilise knowledge and skills. The teachers called for more thorough and detailed explanations as to how to understand the concept competence and how to interpret this concept in each teaching subject. The teachers also called for more information from the school and the ministry of education i.e. presentations, written material and discussions (Meeting, 7. 12. 2009).

Oddur and Katrín were also adjusting the content and organisation of experiments in Chemistry to the new way of thinking and the new learning aims in the curriculum, especially students' competence and nature-reading i.e. relating the content of the experiments to the context of students' every day life experience (Guðjónsson & Hrólfsdóttir, 2010). The new curriculum was not the only reason for their reorganisation of the experiments in Chemistry; they were also experiencing tension because of the cut down in lessons for experiments in Chemistry. Two extra lessons per week for experiments had been cut down because of the economic Recession.

Katrín explained:

The only change that has taken place since I started is the Recession and because of that we get fewer lessons in our teaching and the extra lessons for the experiments in Chemistry and Biology were abolished (Meeting, 7. 12. 2009. Pair interview about the past).

Oddur and Katrín kept some of the experiments as hands on experiments and changed others into demonstration experiments. They changed the structure of the reports students wrote about the experiments in order to better see if the students were able to apply their knowledge and if they could connect the material with their everyday life. Oddur and Katrín asked the students some questions about their experience of the experiments and the reports. They found for example out that the students favoured to get both a grade and written comments for their reports rather than only grade or only written comments. Oddur and Katrín pointed out that in student group work like experiments there is always a danger that some students becoming “passengers” and do not participate actively in the work or only doing a particular tasks as “becoming specialist in doing the front page of the report”. Oddur and Katrín would like to be able to test the students’ competence in experiments by getting them to repeat on their own one experiment (Guðjónsson & Hrólfsdóttir, 2010).

Oddur and Katrín were also implementing new assessment methods i.e. a students’ learning portfolio in Chemistry both in the first year and second year of study and students’ self- evaluation of the portfolio and some other assignments. That can be viewed in line with changes in Oddur’s attitudes towards student assessment as he had come to favour continuous assessment over final exams as the following remark indicated:

Oddur explained:

I have become much more student centred and more open for continuous assessment rather than traditional exams (Meeting, 7. 12. 2009 Pair interview about the past).

It can also be viewed in line with the new definition of the standardised learning credit in the new curriculum where each credit should be based on as equal work effort of the students as possible. One learning credit is equal to a total of 18 to 24 hours of work per week for the average student and all types of work are included i.e. participation in lessons, exams and other assessment, homework, assignments etc. (Mennta- og menningarmálaráðuneytið (The Ministry of Education, Science and Culture, 2012, p. 50).

The portfolio should include all the work of the student over the semester, the study plan, the chapter exams, definitions of concepts, notes, assignments and self evaluation. Oddur concluded that the use of the portfolio was successful but a lot of hard work and more time consuming for the teacher than the traditional final exams.

Oddur said:

It is fun and giving but it is very time consuming and requires very good organisation (Th. Guðjónsson, 2009).

Oddur asked the students to evaluate their work on the portfolio and some of the assignments they put into the portfolio, see Table, Appendix 12-12 below.

Question	Learning portfolio in Chemistry	Average all classes		
		All	Girls	Boys
1	I learned a lot about the context of things in Chemistry	3,5	3,5	3,5
2	I learned a lot about concepts and the language of Chemistry	3,7	3,7	3,7
3	I liked to learn Chemistry by using the portfolio	3,4	3,9	3,1
4	I liked creating my own lists of concepts	3,0	3,5	2,7
5	It was difficult to interpret the concepts in my own words	3,2	3,2	3,1
6	It is difficult to put together and maintain the portfolio	2,5	2,0	2,9
7	It is difficult to create examples of new concepts	3,1	2,9	3,2
8	The work on the portfolio made me feel as I showed initiative in my learning	3,3	3,5	3,1
9	The work on the portfolio helped me to understand what needs to get results in learning	3,3	3,6	3,1
10	I learned a lot of the work on the portfolio	3,4	3,7	3,1
11	I had fun working on the portfolio	3,0	3,5	2,7
12	I recommend that the portfolio will be used next school year	3,8	3,9	3,6

Question	Learning portfolio in Chemistry	Average all classes		
		All	1.study year	2. study year
1	I learned a lot about the context of things in Chemistry	3,5	3,5	3,5
2	I learned a lot about concepts and the language of Chemistry	3,7	3,8	3,5
3	I liked to learn Chemistry by using the portfolio	3,4	3,4	3,5
4	I liked creating my own lists of concepts	3,0	3,0	3,1
5	It was difficult to interpret the concepts with my own words	3,2	3,2	3,2
6	It is difficult to put together and maintain the portfolio	2,5	2,4	2,6
7	It is difficult to create examples of new concepts	3,1	3,1	3,0
8	The work on the portfolio made me feel as I showed initiative in my learning	3,3	3,4	3,0
9	The work on the portfolio helped me to understand what needs to get results in learning	3,3	3,4	3,2
10	I learned a lot of the work on the portfolio	3,4	3,4	3,3
11	I had fun working on the portfolio	3,0	3,2	2,8
12	I recommend that the portfolio will be used next school year	3,8	3,9	3,5

(Th. Guðjónsson, 2009)

Table Appendix 12-12 Students views on the learning portfolio in Chemistry by sex and study year.

Oddur's conclusion was that the students favoured the portfolio and the majority recommended its use again next school year. The girls were more positive than the boys and the students in their first study year were more positive than the students in their second study year. Students in three of five classes in the first study year and two of four classes in the second study year participated in the organisation of the portfolio but no difference was found in their views towards the portfolio (Th. Guðjónsson, 2009).

It is most common that the initiative of doing an action research project comes from a personal and inner need of the teacher to change the classroom practice. In the case of Oddur and Katrín's action research project the initiative came from the educational authorities, i.e. to implement the school's and the government's policy but not only because of the tensions they experienced in their classroom practice although they also experienced tension due to the cut down in extra lessons for experiments. The other tensions identified, see Figure Appendix 12-12 below,

evolve around tensions between the community and the new rules and new tools of the new curriculum for secondary schools. It reflects tensions that are not only experienced in the action research group but also the teacher group as a whole in Sjárvarsíðuskólinn and the secondary school teachers community in Iceland as was discussed in section 10.1.5.

See Figure Appendix 12-12, where Oddur's and Katrín's action research project is visualized in the activity system of the classroom.

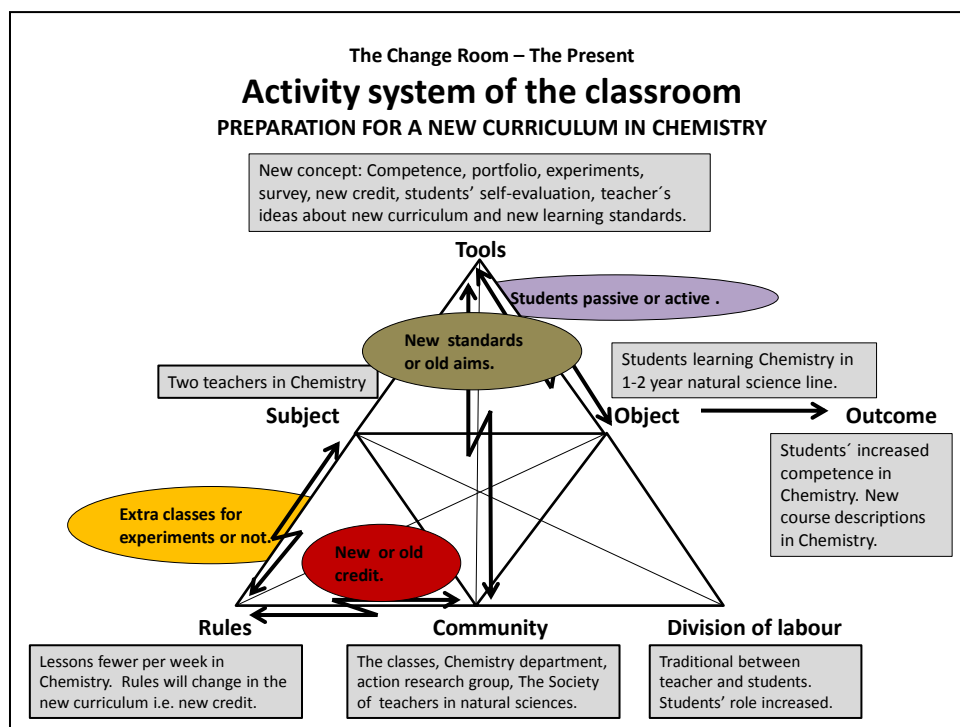


Figure Appendix 12-12 Action research in the activity system of the classroom. Preparation for a new curriculum in Chemistry.

Appendix 12.13 Anna. Students' interest and teaching methods in Biology

Here I will describe the action research project of Anna, Students' interest and teaching methods in Biology. The description is based on Anna's presentation of her action research project at a meeting in the Change Room, power points from that presentation (Óskarsdóttir, 2010) and Anna's participation in discussions in the Change Room.

Anna, who is a teacher in Biology was aged 26 in 2009 and had then taught Biology for one year at Sjávarsíðuskólinn and was finishing her teacher education along her work. The students were in their first year of study at the social science study line. This is the only compulsory course the students finish in Biology at these study lines and their final exam in Biology was at the end of semester.

The aim of Anna's action research project was to increase students' interest and active learning in Biology. She wanted to do that by using varied teaching methods in order to make the learning livelier. It involved more emphasis on active students' learning in the classroom through assignments and increased consultation with her students about the classroom practice. Anna emphasised using varied teaching methods, for example power points, blackboard, videos, experiments, field trips, collective notes, learning to learn, mindmapping, discussions, quizzes, exam with aids and various individual and group assignments (Meeting, 10. 05. 2010). Anna wanted the students to take more responsibility for their learning:

Anna described:

I think I would like them [the students] to take more responsibility for their learning. Just to bring the handouts back into the lessons, have the learning material with them in school and take normal care of their portfolio (Meeting, 10. 05. 2010. Small group discussion).

Anna carried out two surveys among the students. One survey about the teaching methods which 79 out of 120 students participated in and one survey on the evaluation of the course in general those 98 out of 120 students answered. She used closed questions regarding students' attitudes towards teaching and learning

methods and general aspects of the course but she used open questions regarding students' ideas about possible improvements (Óskarsdóttir, 2010).

In the survey about the teaching methods the students liked the group work in lessons the most as a learning method and found exams without aids most boring. The students also considered group work in lessons the most useful learning method as well as individual assignments in lessons. The students considered group work outside lessons the type of assignment you learned the least from. The most liked teaching methods were discussions and group work but the students considered they learned the most from writing down notes while the teacher explained and showed power points or explained and wrote on the blackboard. Regarding answers to the open question of what kind of teaching methods would help the students to better understand the material then they mentioned most often discussions, group work, experiments, read notes, exam with aids and films (Óskarsdóttir, 2010).

Examples of students' anonymous answers:

The teaching methods are fine as they are.

Group work and quizzes, something fun.

Perhaps to do more assignments and talk more about the learning material.

By writing lots of notes and listen to the teacher explain and do exams with aids (Óskarsdóttir, 2010).

In the latter survey, students' evaluation on the course in general the students gave very positive responses (80-90%) towards the teacher's explanations, showing respect, asking questions, encouraging, following semester plan and punctuality. However only around half of the students found the learning subject interesting, the learning material useful and the teaching methods varied (Óskarsdóttir, 2010).

Anna also used discussions for consultation with students about the classroom practice. Anna described:

I also wanted to see how the students looked at my teaching. I sat down with them in a circle and asked them to talk about everything they liked and everything that could be improved. It was very informative to do that (Meeting 10. 5. 2010).

Anna emphasised to continue using the methods the students appreciated most and to increase the variation in the methods she used (Meeting, 10. 5. 2010). Anna tried out giving an exam where the students could bring a paper with written notes. She and the students were surprised when the average grade did not rise in this test from the last one. When Anna discussed this with the students they said they found it difficult to decide what the main points to write down were. Therefore Anna discussed with them various aspects of learning how to learn and did some exercises, for example collective note taking (Meeting, 10. 05. 2010. Small group discussion).

When Anna changed her classroom practice by increasing students' active participation in various assignments i.e. took steps to move away from one way towards two way communication, then she experienced increased tension from the demand of covering the content as she pointed out:

Anna explained:

In the second semester, because I was teaching the same syllabus I was more relaxed and started to try out something new. And this year naturally I have tried out still more new methods. And then I met the coverage ghost at the end of semester, just krrrhhh? This is the coverage ghost. Are you joking, I was going to do so much more with you [the students] (Meeting 10. 05. 2010).

See Figure Appendix 12-13, where Anna's action research project is visualized in the activity system of the classroom.

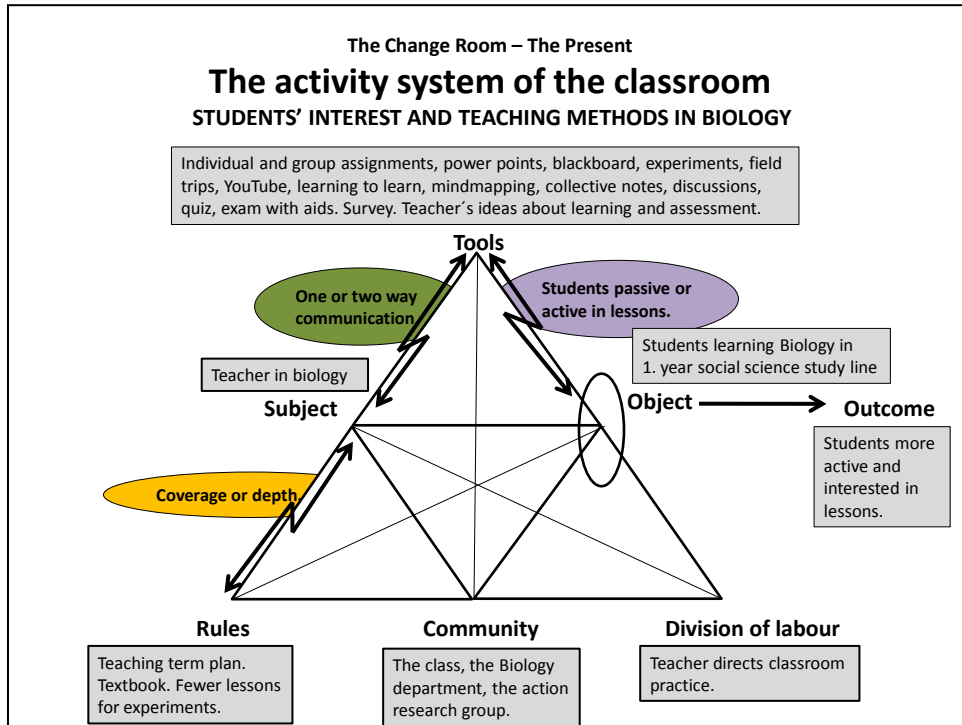


Figure Appendix 12-13 Action research in the activity system of the classroom. Students' interest and teaching methods in Biology.

End