THESIS SUMMARY

Work with school development – a potential boundary zone between activities? The work over time at a Swedish lower secondary school regarding educational integration of ICT from an activity theoretical perspective.

Full text in Swedish

This dissertation sheds light on work-related interplay between a school’s teachers and between the teachers and the school leadership. Special attention has been given to the interaction occurring in the process that evolves when the leading ICT actors of a school formulate a vision for the long-term integration of ICT at the school. As schools have historically been characterised as having a differentiated work organisation and a tradition of autonomy, it is reasonable to expect that the introduction of modern technology into teaching will offer a number of challenges involving both recreational and creational processes. This study can be seen as a contribution to the exploration of working for change by using a holistic and activity theoretical approach, in this case in the work of integrating modern technology, at the intersection of one school’s work to disseminate and develop the use of technology throughout the school and the work of the teachers to change educational practices. Consequently, the focus is on the interplay between the teachers, the leading ICT-teachers and the school leadership at a medium-sized Swedish lower secondary school.

An increased understanding of the processes exhibited in work with change within a school can contribute to broadening the present understanding of how schools and the activity conducted there are both perpetuated and challenged, as well as how the processes of change are both impeded and supported, when people within a school organisation are involved in learning processes that are potentially transformative. Hence, with this work, I am trying to contribute to elucidating, understanding and explaining the process of change that arises when well-established activity such as found in education and teaching meet the changing conditions to which modern technology and its development is contributing. Thus it is both the sequence of events and the challenges appearing over time when people act and interplay within historically and socially constructed, complex activity that are explored. Therefore it is not so much the result of the process that is the focus of this dissertation; instead, it is rather the sequence of operations and actions as well as the continuing movement.

Knowledge interest and objective
A school can be perceived as an arena where a multivoiced group of professionals act based upon different motives aimed in different “directions” towards areas that are important for the activity. In this way school leadership is expected primarily to direct itself towards organisational preconditions for the school’s activity as a whole, while teachers primarily direct themselves towards more limited parts of the educational activity, given the different conditions schools. The overriding question here is: How can work with school development be understood and explained in the potential tension between work for school change and a teacher’s work for or resistance to changes in educational practice?
The more specific purpose of this study is to explore the process of change that arises when a school targets “digital” competencies and ICT-supported teaching within its area of activity as well as following teachers, ICT-teachers and school leaders in this work over time.

Three questions for this study have emerged from the interplay between, what was to begin with, a relatively open, ethnographically orientated study of the course of ICT-related events at a school and a long analytical process in the tradition of activity theory.

- How does work integrating new information technology into activities appear over time among teachers, ICT-teachers and school leaders?
- How does the work of teachers, educational technologists and school leaders relate to each other?
- What is challenged in the work-related interplay between teachers, and between teachers and the school leadership in working for school development?

**Methodology and approach**

In this empirical study the interest is in exploring the trajectory of people’s efforts to change existing activity within a school. A school is perceived here as a complexity of interlinked activity systems. In other words, it is human, goal-orientated and mediated actions as they are expressed over time within and between these historically and socially constructed systems that constitute this study’s unit of analysis. A context is understood to be both specifically constructed by current conditions and events and shaped by history. Consequently it provides an arena for different local and general ideas along with traditions concerning the educational activity and teaching.

Methodologically the study is defined as an ethnographically orientated case study (cf. Simons, 2009). Hammersley and Atkinson (2007) point out that often the boundaries between case studies, fieldwork, and ethnographical studies are unclear and overlapping. This study has many features, methodological as well as ontological and epistemological, that are characteristic of ethnography. The knowledge interest is complex and concerns the work-related interplay between different actors in a school’s work to implement new, potential tools, and thereby in the long-term open the door to the possible development of historically, culturally and socially constructed practices. The study makes use of different methods, collects diverse varieties of data, is carried out “in situ” and includes a great degree of commitment on the part of the researcher, that is, a firmly rooted interest in understanding the perspective of the participants and a long-term commitment (Hammersley & Atkinson, 2007; Walford, 2008; Willis & Trondman, 2002). These conditions do not automatically mean that the approach of the study is ethnographic, but the research process bears distinct features of the iterative and recurring abductive logic that is so crucial to an ethnographic study. It is a question of a research trajectory where ethnographic data are illuminated theoretically in a continuous analytically and empirically systematic quest in order to challenge and understand the “unexpected” (Agar, 2006; Atkinson & Delamont, 2005; Willis & Trondman, 2002). In this work it is the cultural historical activity theory (CHAT) that has provided the analytical tool (Engeström, 1987; Leontiev, 1977/1986).

The empirical study was carried out over three years between the autumn of 2008 and the spring of 2011 in a lower secondary Swedish school in a middle-sized town. The data was collected at the school and on the Internet through participatory and non-participatory observations, through informal conversations, semi-structured interviews and collection of documents, and through a questionnaire.

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1 Teachers interested in ICT, with a special task within the organization to support colleagues or to cover issues with regard to the use of technology.
The digital presence was made possible through successively improved communication on the school web together with some early blogs and wiki pages that came to be developed for educational purposes from January 2009. All in all I was at the school participating in activity for 39 days. These days were spread out to 14 occasions over the three school years (3+4+7). In addition to this, there was contact by telephone and via e-mail, collection of documents from the school and the municipality as well as a questionnaire at the end of the study.

**Activity theoretical analysis**

Leontiev (1977/1986, p. 170) stresses that in order to understand an activity its inner systemic connections have to be analysed. Central to this analysis are different actions or chains of actions, that is to say the relations between them, since the object is reflected in the actions that in turn constitute the activity. In this study a school, that is, its teachers and school leader’s work with developing the use of ICT, is in focus for analysis, which I have chosen to analyse as two inter-related activity systems. The reason for this has to do with the analytical process, where at an early stage qualitatively different goals began to crystallise for the work that the school, represented by the school leadership and the school’s ICT teacher, and the work that I perceived to emerge from the teachers in their efforts to integrate ICT into teaching. In that way it became possible to think about the work as an inter-related process between different activity systems. The construction of the two activity systems shall accordingly be understood as a way to get at interesting dimensions of activity that is being carried on in schools.

When, as in this study, work to bring about school development is in focus, or more specifically work for becoming a school where ICT is integrated and where teachers and students are digitally competent, attention can also be given to the relationship between future-orientated visions, different central actions (Berthén, 2007) and their direction, and the relationships between the actions of different actors within the school (see Engeström, 2008). Accordingly, the object of this study is limited to an aspect of the school’s total activity, more precisely the work to influence and change parts of it, and how this work appears among the different actors.

In the search for how work to integrate ICT emerges at the school, that is to say, how the work of the teachers, ICT-teachers and school leaders relates to each other, it is consequently the course of events that stands in the foreground for analysis. This shows itself in actions where teachers, the foremost ICT-teachers and the school leaders make use of new technology in different ways, try to change the use of it, or in other ways try to influence the use of modern technology. The aim of these actions has also been central, that is to say, that which has emerged as the overall goal.

To sum up, the work of analysis has been a question of capturing the trajectory of work with change, as it appears in the actions of the different actors, and in the relations between these. In this work the process of analysis has been, through the identification of different overall goals, to identify central actions or chains of actions and in extension the driving force in the form of objects towards which the integration of ICT into the activity is directed. Central to this has also been contextual phenomena and conditions such as tools and division of labour as well as routines, habits and traditions, in addition to people’s attitudes towards these and the extent to which they become the object of peer review. The challenges have been sought through the identification of the expression of different tensions, which in turn have been an indication of underlying systematic contradictions.
Summary of the findings
The findings show above all how the integration of ICT into the activity, among the teachers who are exploring information technology, to a great extent is motivated by the needs that are related to teaching and students while the work of leading the school’s work of integrating ICT is motivated to a greater extent by needs related to the organisation, and that these separate motives appear in different and systematically inconsistent ways within the school.

Work integrating ICT into teaching
In the analysis of the teachers’ work to integrate ICT into teaching, the development of the students’ knowledge and skills emerges as the driving force behind the use of technology. The findings show how the knowledge and skills goals that emerge vary in regard to how explicit they are about including the development of digital competence. The more the goal of the activity is understood as related to a subject area or as development of generic competencies, the more it seems that ICT is perceived as offering suitable tools in some respect rather than a conspicuous knowledge goal in itself. This pattern is especially prominent for the teachers who attempt and continue to develop wikis for educational purposes. An example, then, of a goal is that the students’ study situation shall be strengthened by a study organisation that is supported by technology, that through technology students have the possibility of experiencing variety and increased motivation or good conditions for specific knowledge development, and achieving an increased degree of visualisation or increased transparency and accessibility, above all external, vis-à-vis students and the home.

Other goals for the use of modern technology are markedly ICT-specific, even if integrating them into overall activity may seem possible, for example in the reception of new students in the seventh grade or as a mode of accounting for tasks during work experience programmes. This type of motive is made visible primarily in the work that the school leadership and the teachers responsible for ICT promote and that the different teacher teams in turn have the task of implementing through their work with the team’s ICT plans. In this work the object emerges in the form of the students’ but also the teaching staff’s development of specific ICT competencies and information literacy. However, the object show signs of tension and is interpreted in different ways by different individuals. This type of explicit ICT-related competence goal is not as prominent when teachers are talking about the use of wikis in class or in the teaching of their subjects.

Thus another object tension emerges, namely the tension between on one side that which is driving teachers to use information technology, teaching and teaching related benefits and the challenges, and on the other the focus of the ICT plan on computer programmes and technical competencies. Historically the plan that the teaching team is to implement through joint projects is strongly orientated towards training in how to use different software. Even if the teacher teams have been given the task of integrating this work into ongoing alternative activities in new collaborative projects, it seems that the work is widely perceived as something “extra”. Parts of the teacher team’s joint efforts to implement the ICT plan become a question of who is going to take responsibility for the part that has to do with technical competence.

Seen from the school’s ambition to have an ICT literate teaching staff parallel to ICT literate students in the whole school, the existing division of labour among teachers and traditional autonomous thought patterns reveal underlying systematic contradictions. These can be assumed to contribute to the fact that very little time is allocated for teachers to work together systematically in order to make visible and discuss how they actually use the new tools and their motives for integrating them into teaching. Neither do the possibilities for peer learning in the everyday activity seem to be a subject for discussion. Thus, the potentially more untraditional and comprehensive object of activity for the work
of integrating ICT into teaching, that is to say, training for teachers and students together, becomes filled with tension. Likewise existing scripts in terms of explicit and implicit agreements, traditions and routines seldom become the object of widespread common attention. The examples of integration of ICT into teaching that actually takes place and the development of IT competencies and pedagogical work that can be assumed to have begun thus remain to a great degree the experiences of the individual teacher. The findings show that the teacher’s early use of technology is especially orientated toward previously known, especially teacher-orientated practice. Turning points for how-and for what technology is used, arise in the reflected interaction with students and colleagues, where attention is given to alternatives for using technology, which in turn has importance for changed practice and in the long run, conceivable school development.

Work with integrating ICT at a school
In the analysis of how the work of integrating ICT into a school appears among ICT-teachers and the school leadership, that is, those who in different ways are supposed to lead the development, there is a primary and overall motive that emerges among the school leaders, and in varying degrees among ICT-teachers, namely to achieve organisational conditions for equivalent, technologically integrated education within the school. The students’ contact with modern technology should be equivalent during their education, irrespective of the teacher team responsible for their studies. The school leadership is trying to realise this primarily by actions whose goal is to find organisation forms for leading the development of ICT within the teacher teams. This includes establishing structures and tools that support the teachers’ developmental work within the teams, creating models for equipping the school technically, offering in-service training and problem solving. ICT-teachers in turn are trying to realise this motive in the teacher teams by working for an increased integration of information technology into teaching and by contributing to enabling the necessary in-service training.

Through the high degree of separation in the division of labour in the teachers’ work and a relatively low degree of discussion together about how this work can be comprehended, the potentially shared object between the school leadership and ICT-teachers that emerges in the material, appears as complex. The school leadership seems mainly to understand the raw material, that is to say, that which is to be shaped and re-shaped, as organisational prerequisites for a school where all of the students meet technologically integrated teaching. The organisational prerequisites include structures for carrying out the work, financial and material prerequisites, trained personnel, and external relations, along with teacher teams where the work of interpreting and implementing the intentions of the ICT plan are to be performed, with nothing more than indirect intervention from the school leadership.

The object of activity that appears for the ICT-teachers in the rather autonomous performance of work out in the teacher teams mainly has to do with the prerequisites for their colleagues’ and the students’ development of technological competencies. How that object appears to the different ICT-teachers presents, however, tensions in what can be interpreted as the signification of the competencies as well as ideas about the conditions under which these can be developed optimally. Technology in the form of being competent in the use of software emerges early on as crucial, but over time there is also an indication of the beginning of expansion towards perceiving the object of activity as more technology, pedagogy and content integrated (TPACK) (Mishra & Koehler, 2006). An indication of this development appears toward the latter part of the study in individuals; however, it never becomes visible in the collective sense. In the early stages of the ICT group the understanding of the object among ICT-teachers is exposed to certain challenges and discussion, but this process is impeded by
the discontinuation of the group’s meetings and never really gets going again when the group is reconstituted.

**Interrelated activity**

I approach the question of the challenges in the work-related interplay between teachers, and between teachers and the school leaders in their work with school development as a question of understanding the systematic contradictions that appear in the potentially shared object between what I, in this study, have chosen to approach as two activity systems. How do motives appearing among teachers who integrate ICT into their teaching, i.e. the students’ experiences, knowledge and skills development and the conditions for these, relate to the work to become a school that integrates the use of ICT for all students? And the reverse, how do motives for the school’s efforts, that is, to enable students to receive an equivalent, technologically integrated education, appear in relation to the teachers’ integration of ICT into their teaching?

The school’s motive for attaining the organisational conditions for equivalent, technologically-integrated education for all of the school’s students manifests itself in slightly different ways in the work done by different teachers who have the task of integrating ICT, but it is challenged by the systematic contradictions that the coordinated and autonomous traditions entail. In efforts involving the entire school such as film production and blogs for work experience programmes as well as with ideas about a shared teacher team responsibility for implementing the ICT plan’s intentions, there is potential for horizontal learning and professional development for the teachers; that is, possibilities for both challenging prevailing practice and for experimenting with new tools and forms of work. These types of processes take place at the school, but they occur slowly and it is likely that potential to motivate the movement is still unexploited. The teachers’ main concern with coordination of the tasks rather than close and communicatively challenging collaboration regarding them, contributes to reducing the aspects of professional development that would probably be possible in the work of integrating ICT into the school.

The boundary zones that sometimes arise and that could potentially be brought about between teachers from different teacher teams and traditions, with different competencies, habits and outlooks, have a limited scope and effect. The dissemination and making new practices accessible that do in fact take place via the school web and in public wikis do not get attention internally, but rather externally, and examples of work for change remain unexploited, in a double sense. On one hand, the professional development that actually takes place remains to a great extent with individual teachers or within the teacher team. On the other hand, examples remain unutilised as a springboard for in-depth learning processes where the object of activity and the taken-for-granted script is analysed and systematically discussed by peers.

In terms of activity theory the question of what becomes possible in a school has to do with that which emerges as the object of the activity for the teachers and the school leaders, since that contributes to the creation of “the horizon” for possible goals and actions. In this study, composite objects of activity showing qualitative differences can be seen to appear in a complex and interrelated interplay. On one hand, it is a question of an understanding of the direction of the work of integrating technology into the school and teaching, which in this study emerges as a technology focused traditional idea in different ICT plans, conversations and meetings. On the other hand it is about an understanding of the direction of the work as educational integration of ICT into the school and in teaching, which in this study in some sense is expressed by the use of wikis for pedagogical and didactical purposes by different teachers.
The findings also show that it is in the different boundary crossing interplay between teachers, teachers and students, subject representatives, and subject traditions that those turning points in terms of modified or changed practices occur. It is also in such interplay that a certain hint of the challenging of the script and the understanding of the object, even if these occasions in the present study represent systematic work to a lesser extent, instead often occurring spontaneously and on an individual basis.

**Summarising conclusions**

With the above as starting point, three interrelated challenges for school development can be formulated. The challenges can be related to different underlying systematic contradictions which are made visible at this school, but that also can be assumed to exist at other schools. The challenges are to be understood as interrelated and prerequisites for each other and concern:

- The understanding of practice and of the object of activity, i.e. the prerequisites for attaining a common direction in the collective and multivoiced work
- The prerequisites for boundary-crossing learning processes within the school as an organisation
- The leadership of the process and its conditions

Seen from an activity theoretical perspective school development becomes a question of setting the stage for common learning processes within schools; learning processes that involve work articulating, challenging and expanding a school’s conceivably different objects of activity. This work requires time and a common venture that includes teachers and school leadership, as well as their respective areas of activity. The object of activity, practice and the script of both activity systems need to be challenged and attention needs to be paid to experience in using the new tools, if a common new direction of activity shall have a possibility to develop.

Boundary crossing encounters that systematically challenge thought and practice occur less often in overloaded workdays in work communities where teachers and school leadership traditionally coordinate different work efforts autonomously. If the aim is to improve schools, professional practice, and pedagogical activity, teachers and school leadership are presented with the challenge in their overloaded workdays to create conditions for the origin of boundary zones where the educational activity and its direction and different taken-for-granted scripts become the object of analysis and joint discussions that go beyond happenings, experiences and exchanges of information. The present study shows that these boundary zones or zones of proximal development (ZPD) can be attained internally at a school, but that the traditions of autonomy contribute to impeding its emergence. The traditionally loose connection between school leadership, the leadership of ICT development and development of teaching, however, needs to be brought forward and challenged which has also been shown in previous studies (Blossing, 2000, 2004; Erstad & Hauge, 2011c; Scherp, 2002). Other studies also reveal how these boundary zones potentially get further possibilities for development if they are combined with external boundary crossing (Hauge et al., 2012; Lund, 2011).

The object of activity for boundary crossing needs conditions for sharing: completely or partially. This means that the needs related to teaching need to be the starting point for the exploration of technology, rather than the technology itself. In that way the likelihood of discovering the potential added value of the technology probably increasing. Ideas about individual, professional autonomy and professional development as merely related to the development of individual expertise also need to be the object of joint attention and challenge. The combination of subject- and teaching orientation as well as peer group discussion and analysis of current pedagogical practice between critical “professional friends” has most likely the potential to contribute to both re-creation and creation of
practice, individual development and to expansive learning for activity as a whole. To bring about the conditions for these zones of proximal development that exceed the boundaries of subjects, teacher teams, activity and schools or between schools, teachers and researchers, boundary objects, that is, artefacts and tools with the capacity to become motive for collaboration between groups with special interests, become valuable. Support to process leadership, and tools that can make invisible and taken-for-granted practice visible, are also needed.

REFERENCES


