

Boundary crossing between school and university

Exploring the possibilities for development in distance teacher education

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The paper presents a study based on research on the distance education programme for initial teacher education in the Iceland University of Education. The research which is a part of my Ph.D. thesis looks at the distance programme from the perspective of teacher students living and working as teachers in a typical Icelandic coastline district in a sparsely populated region. The purpose of the thesis is to investigate the meaning, importance and possibilities of the programme for teacher students and local schools as well as the importance and possibilities that the connection to the local schools, through the distance students, may open up for the teacher education programme. Development of individuals and the activity systems in which they participate are under consideration.

Context and theoretical framework

The context of the study is a long standing discussion on the problem of bridging the gap between theory and practice in teacher education. The usefulness of teacher education being based in higher education institutions is sometimes doubted and school-based teacher education is increasingly preferred (Schwille & Dembélé, 2007). Recent policies in many countries recommend that teacher education should be arranged in partnership between schools and higher education institutions. Reforms in English teacher education are an example of the tendency towards school-based training (Furlong, 2002) and in USA Professional Development Schools (PDS) were established to bridge the gap between schools and educational departments (Cochran-Smith & Lytle, 1999).

Research on the implementation of this policy in England (Edwards & Ogden, 1998) suggest that lack of theoretical underpinning may be damaging the partnership model and Vygotskian socio-cultural theories are recommended as a tool for opening up understanding and developing the model. A group of researchers in the Center for Activity Theory and Developmental Work Research in Helsinki have been developing cultural historical activity

theory in diverse research projects especially concerning workplace learning (Center for Activity Theory and Developmental Work Research, 2003-2004). Tuomi-Gröhn (2003) reports on a developmental project concerned with educating day-care nurses. Based on Vygotsky's notion of the *zone of proximal development* she explains three aspects of his theory worked with in the project to promote development. One is the importance of *collaboration*

since when collaborating individuals are able to exceed their present capabilities. The second is the relationship of *theoretical* or *scientific concepts* and *everyday concepts* and the importance of their interdependence, meaning that their development is mutual. Here the horizontal movements are taken into account as well as the vertical. The third aspect is *advanced practice* following Vygotsky's focus on development of individuals and their practices.

Vygotsky's concept *zone of proximal development* pre-supposes the need of 'ideal forms' to direct individual development and accordingly student teachers developing professional identity need

"... an environment presenting and modelling an ideal standard of achievement and providing supporting conditions for a successful approximation of this standard" (van Huizen, van Oers, & Wubbels, 2005, p. 272).

Edwards et al. argues that there is a need for rethinking relationships between knowledge created in practice on one hand and in universities on the other (Edwards, Gilroy, & Hartley, 2002). She (1998) claims that in order for the partnership policy to enhance both school development and teacher education the relationship of the systems involved has to be reconsidered.

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

Socio-cultural theories and especially the cultural historical activity theory as developed by Engeström are recommended for shedding a light on the problem. Engeström (2001) has claimed that two interacting activity systems are the minimal unit of analysis needed in order to enhance research on the possibilities of interacting activity systems. As work in

contemporary societies is characterized by polycontextuality people need to learn to cross boundaries between communities. Polycontextuality means that people are engaged not only in multiple simultaneous tasks within one and the same activity but are also increasingly involved in multiple communities of practice (Engeström, Engeström, & Kärkkäinen, 1995).

The idea of boundary-crossing emphasizes the potential embedded in transporting ideas, concepts and instruments from one community of practice to another. It puts emphasis on the new intellectual and practical tools that boundary-crossers or brokers bring into processes of change. Wenger (1998) has put forward the concept of *brokering* in describing connections that people provide when they as boundary-crossers introduce elements of one practice into another.

As actors in two different activity systems the distance student teachers in the study are required to learn to cross boundaries when moving between them. It is claimed that shared objects, which may be only partially shared, by the two systems enhance transfer between them (Tuomi-Gröhn & Engeström, 2003).

Research questions dealt with in this paper are:

1. In what way has the situation of the teacher students, e.g. working as teachers at the same time as being student teachers in the programme, supported them in their studies and work as teachers?
2. What enhances transfer of knowledge and skills when distance student teachers cross boundaries between school and university?

Methods and data

The study as a whole is based on ethnographic fieldwork with repeated visits to five schools in a sparsely populated coastline district from April 2003 to June 2005. Teacher students were visited in the local schools where they were interviewed and their classroom practices observed. The ethnography included observation of each of the school as an activity system with appropriate informal interviews with the staff as well as principals were formally

interviewed. This paper is based on data from three of the schools and three student teachers, one in each school.

Secondly I focus on the activity system of the teacher education programme by analysing online courses. In the spring term 2005 I had access to several online courses in which some of the student teachers participating in my study were enrolled. In this paper I am focusing mainly on the three student teachers mentioned before. Three courses were chosen for further analysis. They represent the diversity of knowledge in teacher education. Ethics is part of the core content; the other two are parts of electives one in arts and craft education and one science and creative arts in education of the youngest primary school pupils. Ethics was taught in second of four years in the programme and had 67 students and 1 teacher. The arts and craft course had 15-20 students and 2 teachers, science and creative art had 44 students and 5 teachers. When the courses were finished I saved and printed out all the transactions and material published during the semester, both from teachers and student teachers for further analysis.

Building on data from both the programme as performed online and the school visits my unit of analysis is the two interacting activity systems; the local schools and the online courses. The focus of the analysis is on the objects of the student teachers' activity and the tools they use when acting on the objects; e.g. *what* they do and *how* – the content, methods and tools they use. Their participation in both the activity system of the online courses and the schools are considered as well as movement between the two systems. Analysis aim to identify and examine what could be possible shared objects that might serve the role of enhancing transfer when student teachers move between the systems in which they participate simultaneously.

Results and discussion

The online courses

I start by analyzing the activity systems of the online courses to identify the content and the methods the student teachers are exposed to in the courses, e.g. the object of their activity and the tools and social practices mediating their actions. The subjects or actors in the online courses are taken to be the student teachers in general and their actions taken in the course webs are analyzed. The tools available to student teachers in mediating the objects of activity are both material and conceptual. Learning management tools offer different affordances that support learning and these affordances may open up for certain methods for teaching and

learning. Teaching methods are revealed in how teachers plan students' activities by suggesting assignments they are supposed to work on and also in the form of actions teachers take in communication with students. Teachers' actions and voice in the activity system are apparently important as an instrument for the student teachers' learning. The teaching methods also affect the possibilities for social practices which are looked upon as a mediating tool in learning, by opening up for or constraining possibilities for communication and collaboration.

The tools

The main material tool for running the online courses in the programme is a Learning Management System in this case WebCT. The system includes different tools for communication and sharing of documents. In the analysed courses threaded discussion was used for communication between teachers and students as well as for students' peer communication. It was used for collaboration and feed back from students on shared assignments and the students sometimes published their assignments and shared them with peer students. Normally students' assignments were in text or picture format (photos, drawings), while some of the teachers used sound files such as PowerPoint with talk.

What: the content

Common for all the courses is that students are supposed to learn (deal with) content, professional discourse, working methods and use of tools in subjects as well as in pedagogy. The printed curriculum and learning to plan classroom teaching is central in two out of three analysed courses. In all the courses students were supposed to learn what Vygotsky defined as *scientific concepts* which in his theory are supposed to interact with and in turn change *spontaneous* or *everyday concepts* (Vygotsky, 1986). Students are to learn ethics, arts and crafts and natural science concepts as well concepts on curriculum and learning theories, e.g. both discipline-based and pedagogical as they are at the same time learning a subject and learning to be able to teach it.

In the ethic course students are to learn philosophical concepts and use them to deal with practical problems, for example, in communication with pupils and parents. Instead of making assumptions about solutions from common sense using everyday concepts the students are supposed to learn and apply concepts from ethical theories. For example the concepts

‘relativism’ and ‘political correctness’ are used to throw light on the situations teachers face in multicultural societies. The philosophy teacher stresses the importance of understanding these concepts for prospective professionals working with and educating the youngest generation.

The procedural part

In order to function as mediators in learning, scientific concepts have to be supported by procedural knowledge in the relevant subject domains (Karpov, 2003, p. 68). Pure verbal knowledge based on definitions of concepts, which often is the case in traditional school instruction, is insufficient.

Here the concepts being taught in the courses are generally meant to be applied to practical reality in schools. In all the courses student teachers are supposed to be trained in working methods and the use of specialized tools in the respective subject matter or disciplines. In the arts and crafts course students are supposed to learn to use cameras to train their sensitivity of both natural and cultural environment and learn to use it as a resource in creative work. In natural science student teachers are supposed to learn to use diverse tools available in everyday environment to do experiments e.g. in exploring sounds. The methods used are generally exercises that student teachers are supposed to work on individually or in groups, some times with children, and then share their experience online by publishing it on the course web.

The teaching and learning methods

The teachers present the reading materials and make assignments that usually are supposed to be shared on the web. Students are supposed to read, contribute to web-discussion, collaborate on assignments, and make teaching plans. As a rule it is obligatory to share ideas and plans on the course web.

From the course web:

Wow.

Great ideas, I had not thought of it that way. There you see how important it is to have an opportunity to communicate. Just to see what the others are doing is turning on one's own ideas.

Good luck. Best regards,

Jenny.

The methods used are generally exercises that student teachers are supposed to do at home, that is learning by doing, and then they are supposed to share their experience on the discussion web. If the exercise includes doing some creative work students are encouraged to share their work by publishing it on the course-web and sometimes that is obligatory. Usually this kind of learning action is supposed to be performed individually though there might be exceptions where two students work together.

Discussion is an important part of the learning actions students are to perform on the course web. All teachers encourage students to communicate but there are differences in how it is organized, how teachers give feedback and how it is graded.

From an interview:

I really like when the teachers encourage us to contribute in web-discussion with our own experience. [...] It gets the discussion going.
And then the teacher has to interfere and bring the professional side into the discussion, link it to the learning material.
And bit by bit we start to do it ourselves and say like
– I was reading this article and then I saw it was related to that and started to think...
It is important when the teacher arrives doing this kind of things.
In the beginning we need a freedom to talk about ourselves, to get a feeling of ownership over the space.

In the ethic course the philosophical method of dialogue is used in order to practice the use of concepts in solving problems from schools as told in stories that could be real. Each student is supposed to contribute to the online discussion about a defined topic three times a week (and that is part of the grading for the course). When the discussion is closed the teacher publishes a written general response on the course-web, meaning that he does not e.g. correct misunderstanding of particular students but corrects in general the understanding of a given (specific) concept.

One of the motives in teacher education is learning to be able to participate in professional discourse and therefore the method to participate in online discussion should be appropriate. The affordances of threaded online discussion web are that it is saved in a written text and the line of reasoning can be followed. It may be read repeatedly and reflected on before responding to it.

Reflective summary on the online courses

The analysis of the online courses reveals student teachers' contributions to a learning community on the web, collaboration on assignments and sharing of their solutions, experiences and some times feelings. It is a culture of open debate and mutualism and students are really clever supporting each other in many ways. Students appreciate the collaboration although they all know the free-rider problem when students do not participate in the group work but get their names on the assignments all the same.

On the course webs students seem to be more actively engaged than the teachers and they take initiative when and if there is a lack of control on behalf of the teacher. For example when one of the teachers did not "show up" until four days after the module should start. The invisibility of teachers on the course webs makes it look like more the students' space – where they control the communication.

However the discussion as a method in distance teaching and learning gives rise to tensions and contradictions. It is clearly a benefit to have an opportunity to develop conceptual understanding in discussion with fellow students. The written mode and the threaded discussion enhance reflexivity as students get time to read a discussion in context and reflect on it before contributing themselves. But on the other hand the asynchronous mode does mean that the teacher is not in hand to correct possible misunderstanding of individual students even if he comments on the discussion in general. To analyze this kind of contradiction in online teaching can in activity theoretical terms be a way to develop the activity (Engeström, 1987).

The local schools

Now the focus will be turned to the three different local schools where three student teachers participating in my study work as teachers. The schools are very different – not only in size – but in history with regard to the experience of having teachers who at the same time are enrolled in a distance education programme. In two of the schools there have been teachers in the initial teacher education distance programme at the Iceland University of Education since its inception in 1993. In one of the schools the first time teachers were enrolled in the distance programme was the year I started my data collection. By using concepts from cultural-historical activity theory I will describe the student teachers as actors in the activity systems of the schools focusing on their objects of activity and how their tasks are mediated (enhanced or hindered) by the school culture. The aim is to explore what makes the schools likely or not to support or enhance boundary-crossing when student teachers move between them and act as participators both as students in the programme and teachers in the schools.

Lilith at Waterside school

In Waterside school situated in the biggest town in the area there are more than 500 pupils and over 50 teachers. Since 1993 there have always been some teachers in the distance programme, at first only initial teacher education and later in the graduate department as well. During the fieldwork for the study four to five are enrolled in initial teacher education programme, seven or eight in the graduate programme specializing in some areas of education.

Lilith teaches one of three classes in the 4th grade. The teachers collaborate on curriculum planning, coordinating the content and methods. She collaborates with a teacher assistant in preparing inclusive teaching methods in accordance with official school policy. The principal and two vice-principals collaborate on management and they look at cooperation is an important forum for student teachers to develop their ideas and learn.

My experience of visiting the school is that the atmosphere among the teachers, for example in the staff-room, is rather open and gives space for professional discussion. Lilith can discuss new ideas which she brings from her studies with her fellow teachers although they are not always ready to accept them or change their modes. She thinks that her colleagues are helpful but often more willing to teach her than to learn from her contributions.

Being in the situation of crossing borders between the activity system of the school and the programme she can point to contradictions in both systems and how they could be worked out in order to develop, be it the school or the programme. She could have the potential to be a broker or a change agent that by her practice transfers ideas from one system to another. The question is what has to characterize an activity system in order to be receptive to changes.

Sara at Coast school

She teaches in a middle size school with 150 pupils in a fishing industry town with ca thousand inhabitants. There are around 20 teachers in the school and 2005 three of them were immigrants. From 1993 there have always been some teachers enrolled in the distance programme. 2005 four teachers were enrolled in the initial teacher education programme and two had just finished a diploma in the graduate programme. The principal was graduating with master's degree.

There is usually one class in each grade and each teacher has the responsibility for content and methods in her classroom. Teachers traditionally work isolated and collaborative atmosphere has not been cultivated. Principals were of the opinion that it was needed to enhance a more open professional discussion among the staff which they saw as important for further school development. The classroom and parent cooperation are important for Sara to practice the procedural part of the studies.

Some of the pupils had been analyzed with ADHD and because of that she had a teaching assistant to support her in the classroom. They collaborated well with Sara in the decision position and the assistant being ready to support her as needed.

I visited Sara first when she was in her second year in the programme. She told me that she did not discuss her studies with her colleagues or ask them for support although many of them had gone through the same programme a few years ago and some still were enrolled in the programme. She didn't want to disturb them she said, as they have enough to do.

However she told me how she used what she learned in the programme with her pupils in the classroom and how the studies had helped her in gaining self-confidence in parent cooperation. When starting her third year she ran as a candidate for the planning council for the youngest pupils, apparently gaining self confidence as her studies progress. She had by then also gained a reputation as a good teacher among the parents in the town. The principal praised her increasing professionalism which for example became evident in teaching plans she hands in. She also admired how clever she is in trying out in the classroom new ideas she brings from her studies. Classroom observations confirm that.

Samuel at Creek school

Creek school is a small school of 30-40 pupils in a fishing village of ca 300 inhabitants, of which about 30% are foreigners. Those are people who have moved to Iceland from Poland, Russia, Thailand and Philippines to work in fishing factories. The teachers are five to seven may be not all with a full post and during the years of fieldwork two or three of them were distant student teachers. Teaching staffs had been very unstable with new principal each year.

Sam is teaching 10-12 pupils in the 5th, 6th and 7th grade in one class. He seems to decide more or less for himself what and how to teach, and seems to have autonomy to try out methods and ideas he gets in his studies as he wishes. These ten to twelve pupils in Sam's class have five different ethnic backgrounds so Sam really would need support in dealing with

that, not only the pupils, but also how to deal with home school cooperation in a multicultural society. As up to one third of the pupils in the school do not speak Icelandic as their first language this could be of crucial importance but have not been taken care of following Sam.

Since there have been problem with the school management and the school has suffered from lack of educated teachers, professional atmosphere seems to be very much lacking. So it seems that the school supports neither collaboration nor professional discussion although the atmosphere is welcoming and caring for the pupils' wellbeing. But as Sam has a lot of autonomy in his job as a teacher he can try out methods and ideas he gets in his studies. The problem being that the 'ideal form' for teaching presented in the teacher education programme is far from Sam's reality.

Conclusion

The aim of this paper was to enhance understanding of; firstly in what way has the situation of the student teachers participating in this study, e.g. working as teachers at the same time as being student teachers in the distance programme supported them in their studies; and secondly to explore what enhances transfer as the student teachers move between the two activity systems. Advanced practice of individuals depends on affordances in the environment. The distance student teachers under study here are in the special situation of moving between activity systems and crossing boundaries. They are as well in the situation of transporting ideas, concepts and instruments from university programme to their local school and vice versa. In the following attention will be drawn to three strands in the Cultural Historical Activity Theory which sheds a light on the matter.

The schools' role in supporting procedural knowledge

In developing Vygotsky's theories on scientific and everyday concepts it is claimed that in order to function as mediators in learning, scientific concepts have to be supported by procedural knowledge in the relevant subject domains. Pure verbal knowledge based on definitions of concepts, which often is the case in traditional school instruction, is insufficient (Karpov, 2003). As the participants in this study are in the situation of constantly moving between the theoretical setting of the university studies and the practical settings in the schools their dedication of theoretical concepts is simultaneously grounded in the procedural knowledge they acquire in teaching. However it is obvious that the local schools differs a lot regarding to support of this kind for the student teachers. Cultural-Historical

Activity Theory stresses the interdependence of individual and social development and here it is interesting to enhance understanding of the relation between individual and institutional trajectories.

Distance student teachers as brokers

Brokering is about the connections that people provide when moving between activity systems and introducing elements of one practice into another. It draws attention to transfer across context. Here we use it to understand how the student teachers when moving between the schools and the programme are bringing knowledge, ideas and perspectives they obtain in one system into the other.

All the student teachers participating in the study witness how they have been able to use diverse teaching methods they have learned about in the programme in their teaching practice; an example of bringing obtained knowledge from the programme into the classroom. It can be identified how the student teachers bring practical knowledge and perspectives built on their experience as school teachers into the online discussion forum on the course webs. When the assignments in the programme are supposed to be tried out with children, the student teachers who are holding job as teachers have a privileged situation since they can try them out with their class. Others would try the assignments with their own children or friends. Lilith often describes in details how she has applied assignments with her class, what went well, what mistakes she made and what she learned from it about how to implement it next time. Her descriptions are instructive and practically valuable for peer students. She is acting as a broker bringing knowledge from her experience in the local school to the programme. Examples of this can be found with all the three student teachers discussed in this paper.

Possible shared object of the schools and the online courses

In understanding what enhances transfer of knowledge and skills when people cross boundaries between activity systems, Engeström (2001) has suggested that shared objects between the two systems have a role to play. From the description and analysis provided in this paper it is suggested that *collaboration* and *ideal forms* might serve as possible shared objects which enhances student teachers' learning when moving between the different systems. This means that when the courses in the programme and the schools where the student teachers teach share the ideal forms guiding their practice, transfer of knowledge and

skills between contexts are promoted. In a similar way when collaboration is a form for practice in both the schools and the programme it supports transfer between systems.

Next steps

As for the local schools and the distance programme as activity systems, advanced or qualitatively better way of functioning has to build on collaboration of the two interacting systems on a systemic level. Collective negotiation of possible shared objects is a way to develop the systems (Engeström, 2001). They might be different for the three schools in this study which is meant to inform the kind of interventions needed to promote what in activity theory has been conceptualized as *developmental transfer* (Tuomi-Gröhn & Engeström, 2003). Here it is argued that the distance students have prepared the soil for that kind of development by brokering and that they might in some cases be possible change agents. The next step in my study is to further explore the possibilities for promoting developmental transfer between the schools and teacher education programme.

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