

Learning networks and school development

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Abstract

The impact of networking on school development is in focus. In one study teachers, school leaders, directors of education and members of local school boards in three kommuner were interviewed. In another study the teachers' and school leaders' ability to transform economic resources into good marks in year nine in networking schools were compared with other schools. In a third study changes in grades were studied in a networking kommun. On basis of the three studies conclusions are drawn about what effect networking has on school improvement as well as on schools development in direction of being learning organizations.

Since the beginning of the 1990s Swedish kommuner have become more dependent on co-operation at a regional level as well as with different actors to meet the demands and to solve the problems they are facing (Montin, 2004). Neither resources nor the prevailing competence are sufficient. Networking and partnership have become a way to handle new challenges. One of the networks that have been organized is based on the notion that school development driven by teachers and school leaders is about finding solutions to problems encountered in everyday teaching situations. School development is *problem-based* and needs to start with problems that teachers and school leaders encounter. Problems arise when previously successful ways of working no longer give the results that teachers expect. Problems may lead to solutions based on traditional conceptions of learning and teaching, but they may also lead to more radical ground-breaking solutions on how to contribute to the students' learning. Teachers and school leaders need to learn about and to deepen their understanding of the nature of the problems if they are to be able to improve their school (Carlgren, 1986). With this idea as a foundation the problem-based school development (PBS) network started in 2003.

The aim of the PBS network is to support the participating schools and kommuner in their work with school development aligned with the ideas of problem-based school development and to deepen the systematic knowledge-building process about such development. A critical question is whether or not the learning gained by the individuals participating in the network are adopted and used in the organizations in which these participants work. A study of a school development network by Björn et al (2002) showed modest changes in practices in the schools although the commitment among the participants in the network was high. Co-operation in the network was perceived as valuable by the participants who exchanged ideas, tips and experiences. The main challenge, however, was to get their organizations to buy in to the results of the external network.

In this article results from three studies of the impact of an extensive network of schools on everyday pedagogical work in the schools are presented. Some

tentative conclusions are drawn about important features needed for networking to be successful as a strategy for school development at the local school.

The studies have been conducted in the Swedish school system. Most Swedish schools are owned and driven by a kommun. The country is divided in 290 geographical and political-administrative areas called kommun. The kommun employs teachers, school leaders and other staff that work in Swedish schools. Between the age of seven until sixteen students go to grund schools where they follow a comprehensive programme for all young Swedes. During the first three to seven years the class is mainly taught by the same teacher. Gradually specialized subject teachers are introduced during school year six and seven. These subject teachers follow the students during their last three or four school years. Almost all grund school students, 92 per cent of a year group, continue directly to upper secondary school. Around 3/4 of these complete their upper secondary education within three years. In most schools teachers are organized in work teams lead by teacher team leaders who coordinate the work of the teachers. School leaders are expected not only to organize and administer the work in schools but really lead it. In each kommun there is a politically elected local education board. At the top of the school organization in a kommun one often finds a Director of Education who steers and supervises the school leaders in his/her school organization. Each school is divided in work units where teams of teachers based on common students plan their work together. Each work team of teachers is led by a work team leader, one of the teachers in the team. School leaders are the main actors in the planning and implementation of the competence development program at the school. The volume of time that can be used for teacher competence development days is 13 annual days.

Earlier studies and the way the PBS-network works

Svensson et al (2001) conclude that each separate organization involved in a network needs to build up an internal organization for the local development process. Otherwise, there is a big risk that learning gained in the network will be isolated and not put into action in everyday work. Andersson & Paulsson (2003) emphasize such factors as allocating time, analyzing problems and possibilities, getting support at the local school authority level, and creating dedicated and co-creative participants that make networks effective. To combine support from the administration with participation by teachers are rare to achieve. External support is of great importance, especially in the beginning of the networking.

A learning network consists of a number of independent individuals, groups or organizations with the aim of helping one another to accomplish something which cannot be achieved alone. The aim of the learning can be to deepen the understanding of a phenomenon or to find ways to actuate prevailing ideas. A network can have as its main focus acquiring the best practice or developing the next practice. Acquisition and participation perspectives are two distinct perspectives of networking (Andersson & Paulsson, 2003). The first understands learning as transfer

of information from one mind to another. The second perspective focuses on learning communities in which joint efforts in a mutual learning process are the foundation. Acquisition model that builds on disseminating good practices and tips has at least two serious shortcomings. The source may lack credibility in the eyes of the receivers, and it may be hard to implement a new practice in another context.

Hargreaves and Shirley (2007) studied a network in England that encompassed about 300 underperforming schools. The school leaders were given access to successful mentor schools. Short-term approaches to improvement such as providing the students with test-taking strategies, study sessions after school and on weekends and providing a snack before examinations were prioritized. Participants reported great appreciation for the network, especially because it contributed strategies that could be applied instantly. There was, however, little evidence for engagement in long-term strategies for transforming teaching and learning, but these short-term efforts resulted in immediate better grades. By focusing on tested achievement data and numerical test-score data above other kinds of evidence such as teachers' experiential judgment, a network tends to become a performance training sect (Fullan, Hill & Crevola, 2006).

Short-term gains of this character have been shown to be temporary rather than lasting (Fullan, 2001). Already during the 1940s, Lewin (1942) found that the way an individual learns affects the probability that the learning would be put into everyday practice. Learning, gained through an acquisition model, is implemented to a lesser extent compared to learning gained by being a co-creator in the learning process.

Björn et al (2002) studied two school networks. Although tips and presentation of good examples dominated the network meetings only small improvements were indicated. The individuals that were participating in the external networks found the network meeting valuable for their own personal development, but they had difficulties in sharing their positive network experiences with their colleagues at their home schools. The work in the network meeting consisted more of an exchange of experiences in a supportive atmosphere than of challenging encounters where different perspectives were put forward and scrutinized. Although the results were discouraging, Björn et al conclude that networking is a promising strategy for school development, but the work suffered from a lack of knowledge on how to structure and manage learning networks. There are both pros and cons when it comes to learning networks as a way to get better quality in an organization. Svensson & Otter (2000) summarize the pros as flexibility, horizontally, willingness to cooperate when asked to, ease in dissemination of knowledge and it is easier and cheaper to use external experts. The benefits lie mainly in the beginning of the development process and the constant shortcomings concern the implementation of the learnings into the organization. The distribution of responsibility is often unclear as is the structure of the process that often is continually evolving, all of which creates uncertainty.

After a critical review of research within the field, they conclude that evidence of concrete results is scarce. The results are seldom described and discussed

from impacts other than in terms of synergetic effects, values and attitudes, and transparency.

Participatory studies in the PBS-network have shown that the mutual learning model is more emphasized compared to the acquisition model when schools put the ideas of problem-based school development into practice but it was also clear that many learning groups had difficulties in transforming their experiences into deepened learning about teaching and learning. (Scherp, 2007). In this article I focus on the connection between results in terms of grades and participation in a network mainly characterized by the mutual learning model.

The focus of PBS network is to enhance the quality of student learning processes. School development refers to conscious, sustainable changes integrated in the everyday life of a school that encompass the whole, or at least an extensive part, of the school. Teachers claim that their own experiences are the most important factors that influence their way of teaching, followed by dialogues with colleagues and students about shared experiences (Dalin, 1993; Hultman & Hörberg, 1994; Richardson, 1994; Scherp, 2003; Scherp & Scherp, 2007).

Problem-based school development builds on the assumption that conceptions have a great impact on how different situations are handled. The understanding of the centrally mandated curriculum and teachers' own knowledge about how to contribute to high quality in the learning processes of the students is of special importance for the quality of the school. A sense-making holistic pedagogical idea based on the school mission has proved to be especially important as a guiding principle when learning about disparate problems and issues of development. Changes in ways of working that are not followed or preceded by conceptions coherent with the actions tend to be short-lived. Sense-making and deep learning processes among co-workers need to be organized. In problem-based school development, sense-making learning processes in networks are organized so that teachers and school leaders deepen their understanding about important problems or about puzzling situations. The process of school development finds its energy in the curiosity of the teachers and the eagerness to solve the confusion emanating from puzzling situations.

In each school participating in the PBS-network internal networks are fundamental. These networks consist of learning groups in which teachers and co-workers from different spheres of activities within the school come together to learn about issues they perceive as important to help students in their learning. These networks are the core of the development activities. Schools participating in the PBS organize their own learning teams. Each learning group has a leader of the learning process who has been trained for the assignment. The learning teams use some of the national mandated thirteen annual days for competence development on issues they themselves find important when trying to raise the quality in the students' learning process. Teachers sharing the same problem or interest constitute such a group. At the end of a learning period the groups share their experiences and meet together with the school leaders to share their insights and to help each other with their

different learning issues. Together the groups recommend better solutions to the problems that they have illuminated than already exist at the school.

Within the kommun a first school external network gathers. During these cross school network meetings teachers and school leaders share and summarize their learning. If possible conclusions are drawn that help more than one school to go on to finding solutions on shared problems.

Kommuns and schools within the PBS-network come together at the national level twice a year to cross fertilize learning work with self chosen problems and to exchange conclusions about further actions to take. During the nation broad assembly that takes place twice a year tips are avoided except for effective methods to learn about important problems. Tips and experiences from the local schools and kommunns are instead used as the basis for deepened knowledge building. However, besides focusing on a deepened understanding of problems, learning processes about how to translate and transform conclusions into practice are also ongoing.

The content of the national network meetings is strongly influenced by the local networks and consists of the problems, experiences and learning identified by the local networks. In the national network meetings, the participants choose an issue in advance among several options in which they are especially interested. Most of the time, participants from different kommunns, school forms and positions are grouped in small co-operative learning groups of about seven persons, according to their choice of issue, trying to find patterns in their experiences and to understand why the patterns look the way they do. The different experiences and common learning of the participants constitute the empirical basis for more systematic analyses which are presented at the network meeting the following year.

At the opening session of each network meeting, the conclusions from the national and the local networks of the preceding year are presented to all participants by the participants. Besides the learning groups and the opening session, the participants are offered seminars related to the issues at hand during that specific network meeting. Based on the problems and on how the work in local networks ended, the results of the learning processes in the national external network have also been successively documented on a website and in a series of booklets.

Eight kommunns that shared the same understanding of school development were participating when the network was initiated in 2003. By 2007 it had expanded to involve 43 kommunns with about 800 schools in which around 10 000 teachers, 300 school leaders and 150 000 students were involved. The network encompasses preschool, grund school, gymnasie school and adult education.

A study of three kommunns

Fortyeight semi-structured in-depth interviews were conducted with politicians in the elected school board, Directors of Education, school leaders and teachers in three kommunns (Scherp & Åstrand, 2007; Åstrand, 2009). The initial question was: “Has PBS had any impact on your work?” Questions that followed aimed at a deeper

understanding of eventual impacts of the network activities and why these occurred. Teacher teams were interviewed in groups others were interviewed individually. The interviews were recorded, transcribed and analyzed.

Most of the statements of the impact of PBS deals with changes of teacher work and teacher thinking. The contribution of the network to school development is mainly described in positive terms, regardless of position of the interviewed, even if there is a tendency to be more positive higher up in the school hierarchy. The local school authority in one of the kommuns stated that the impact of the PBS-network surpassed their wildest expectations and they describe the development as a success story. The second kommun has the same perception and declared that PBS has helped them to turn a negative spiral into a positive one. In the third kommun the director of education states *“It has been integrated in us. We are reflecting when we talk and ask ourselves ‘What have we learnt’? Mistakes are no mistakes, it’s lessons.”* But some of the school leaders in that kommun do not share this understanding and states that *“It would be great if the local school authority was a good example and inspired us instead of being a hindrance”*.

In the two kommuns where the local school board has been involved, both the board and the professionals claim that there has been a shift in the relationship going from control over to trust and from prescribing to support.

The school leaders state that they feel more confident as leaders. They have found ways and structures that help them to translate their conceptions about leadership into action. *“PBS has been a support to me as a school leader to focus on important issues”*, *“To me PBS has been a confirmation that I have been on the right track earlier. At last there is someone that has thought a little bit more on this and found ways to implement it and organize it”*. Even if most of the school leaders find PBS helpful there are also statements like *“At the same time I don’t feel dependent upon Karlstad University and PBS in my everyday work, I can even forget that I am a part in that work”*. In one kommun leadership principles has been formulated at the central level to be used as a guiding principle in connection with recruitment and in introduction of new school leaders.

Interviewed school leaders have noticed an enhanced feeling of mutual trust among the teachers that seems to have resulted in a greater openness for new ideas. *“Now, the teachers don’t ask for solutions of what to do or for more resources either but instead they ask themselves what they can do to find a good solution to the problem”*.

The main pattern of statements among the teachers can be summarized by: *“It has become more interesting to be a teacher and PBS gives us tools to change the world”*, *“Perhaps we talked earlier too, talk, talk, talk. Now it’s more quality talk and that’s what is important”* but there are also statements like *“We were already good at taking up problems and support each other so I can’t see any substantial contributions of PBS”* and *“No importance at all”*. The positive effects of the structured learning dialogues are often mentioned by teachers as well as school leaders and the local school authority as an important tool. These dialogues have

influenced the climate of co-operation and contributed to a deeper understanding of perceived problems as a preliminary step on the road to find solutions. The learning dialogues are also interpreted as having resulted in greater responsibility for handling problems instead of pushing away responsibility to someone else.

Some teachers state that they have adopted learning dialogues in their work with the students and that they have become more interested in the conceptions of students. *“Yes, but you can also use it with the students to see and learn about their way of thinking.”* Central administrators contend that the network activities have contributed to good results in student scores at the end of year nine. These judgments are confirmed by official statistics published by the National Agency for Education

A study based on official statistics

Official statistics produced by the National Agency for Education were used as a measure of how good teachers and school leaders are at transforming economic resources into better grades (Scherp, 2007). The economic resources allocated for education in each kommun were divided by the merit scores obtained in school year nine when students leave the compulsory grund school at age sixteen. A merit score is a sum of all markings that the students receive in sixteen subjects that they study in the grund school. These scores are used for selection into special parts of the gymnasie school. The calculated divisor (economic resources/merit scores) was seen as an indicator of how good the teachers and school leaders are in transforming received economic resources into solid knowledge or at least into good grades.

Two groups of kommuner participating in the PBS network were compared with 270 kommuner not having joined the network. The first group of kommuner consisted of the eight kommuner which had been participating in the network for five years (2003 to 2007). Twelve kommuner constitute the second group that had participated for four years (2004 to 2007) in the network. Table 1 shows costs per merit score for the two groups of PBS-kommuner compared to all other kommuner in Sweden.

Table 1. Costs per merit score 2003-2007.

Group of kommuner	2003	2004	2005	2006	2007
PBS-group 1	251	252	259	265	269
PBS-group 2		250	259	273	277
Kommuner not participating in the network	248	258	269	282	293

Initially the costs for education in the first group of eight PBS-kommuner exceeded the costs in the group of 270 kommuner by 3 SEK. Five years later the costs were 24

SEK less in the first group of PBS kommuner. The second group of twelve PBS-kommuner started with an average educational cost that were 8 SEK below the 258 kommuner not participating in the network. After four years, these costs further decreased to 18 SEK less.

Better merit scores are only a partial criterion of success in the PBS network, as the importance of the whole school mission is stressed, but the results from this study indicate that the teachers and school leaders in the PBS-kommuner gradually surpass teachers and school leaders in the other kommuner in helping the students to reach better grades. Figure 1 shows the changes in differences in the ability to transform resources to better merit scores during the studied period. The two groups of PBS-kommuner are compared with all other Swedish kommuner which constitute the baseline (0).

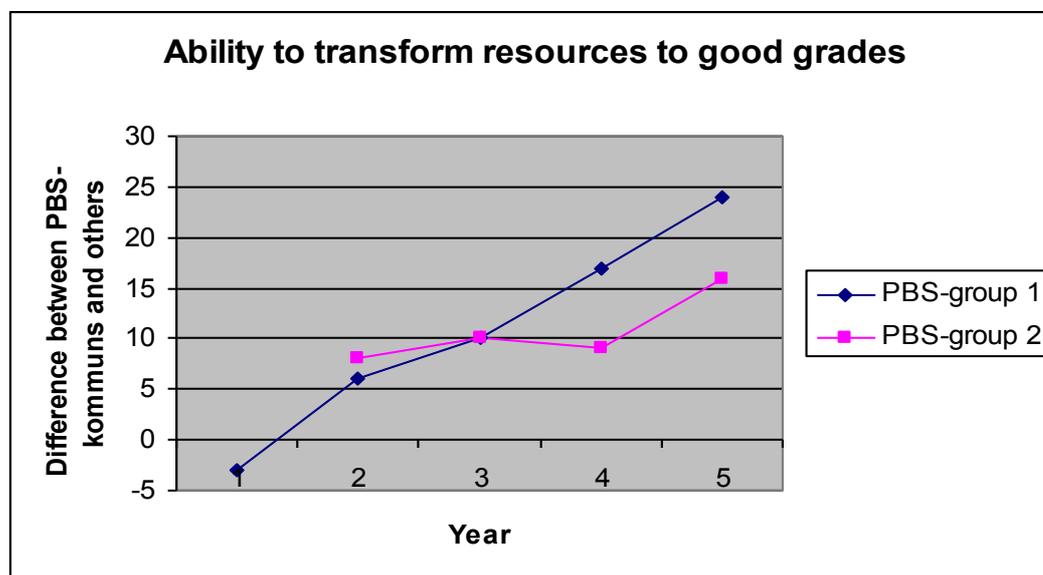


Figure 1. Differences in cost (SEK) per merit score between two groups of PBS-kommuner compared to other kommuner 2003 – 2007.

Besides the better ability of the PBS-kommuner to transform allocated economical resources to good grades, they have also, during the studied period, surpassed other kommuner when it comes to average merit scores. In PBS-group 1 the merit rating has improved with 7.7 points and in PBS-group 2 with 3.3 points and in the kommuner not joining the PBS-network with 1 average merit score point.

A quantitative study of six school districts in one kommun

Six school districts encompassing 37 schools were studied in one of the kommuner that have participated in the PBS network (Scherp, 2008) during the years 2004 to 2007. The aim was to study the school internal network and relate changes to

instructional patterns and students' results assessed by grades in year nine. The instructional pattern and the internal learning networks were assessed by a survey sent to all the teachers in the kommun. The survey consisted of the following statements:

At our school ...

- we share basic ideas about the assignment
- we create challenging encounters
- teachers want to learn from one another
- evaluation and reflection is a way to enhance learning

At our school the school leaders ...

- are leaders of the teachers' learning about teaching and learning
- are active in the discussions of pedagogical visions

At our school ...

- the students' conceptions, thoughts and ideas are important points of departure for learning
- we let the students formulate questions as important points of departure when we teach
- we stimulate analytic and reflective ways of working

A scale from 1 to 5 was used where 1 stands for *Do not agree at all*, and 5 *Totally agree*, with statements used to measure three dimensions. The mean of the first four items is used to estimate the degree of learning orientation among teachers. The mean of the two items about school leaders indicates learning oriented school leadership and the mean of the last three items indicates student oriented teaching. The survey was administered once a year during the period of 2006-2008.

To learn together has been strengthened both at the teacher and the school leader level. For the kommun as a whole, the mean for the learning oriented leadership increased from 3.53 to 3.63 and the learning culture from 3.56 to 3.70. The results from the study confirm the results from the qualitative studies. According to the teachers' responses the student oriented teaching, aligned and coherent with basic principles of the learning organization, have increased during the three years from 3,32 to 3,57.

The development of the internal learning network also coincided with higher merit scores. The mean merit scores for students in year nine increased from 201 in 2006 to 208 in 2008 compared to an increase in mean from 204 in 2006 to 205 in 2008 for all other kommuner in Sweden. The costs per merit score have decreased from 312 to 305 during the studied years compared to an increase in mean from 282 to 307 for kommuner in Sweden that are not members of the network. The difference has increased 32 SEK in three years. This means that the teachers' and school leaders' abilities to transform economic resources into good grades has increased in a substantial way in this networking kommun compared to the other kommuner.

The degree of actuation of internal learning networks differs among the districts. Two groups of schools stand out even though they had about the same mean concerning both learning leadership (3.52 and 3.54) and learning culture (3.55 and 3.58) when the study started. One group consists of 13 schools comprising two school districts. The second group consists of 24 schools comprising four school districts. In the group of four districts the mean for learning leadership increased (0.21) compared to the other group which decreased (- 0.13). The mean for learning culture increased with 0.21 in the group of four districts and did not change in the other group of districts.

From official statistics, it is possible to relate merit ratings to the separate districts. That makes it possible to compare changes in creating internal learning networks to changes in instructional patterns and merit scores. In Table 2 the changes from 2006-2008 are presented separately for the four districts that have changed in the -direction of learning and those two that have not changed

Table 2. Changes in means in learning-culture, learning-oriented leadership, student oriented teaching and merit ratings between 2006 –2008 in two groups of districts based on statements on a scale from 1 to 5.

	Changes in the two districts		Changes in the four districts	
	Mean	s	Mean	s
Learning culture	-0.01	0.02	0.21	0.17
Learning-oriented leadership	-0.13	0.14	0.22	0.20
Student oriented teaching	0.08	0.11	0.36	0.07
Merit rating	-1.35	4.60	11.18	11.76

As can be seen, both the changes in instructional patterns and in merit ratings are aligned with the existence of local internal learning networks. As the study includes the whole teacher population in the kommun, statistical significances are not calculated.

Discussion and comprehensive learning

Three studies are reported where the outcomes of networking is traced. The ways in which teams of teachers, schools and kommuner work within a Swedish network called PBS (Problem Based School development) is described. An effort to find out which effects or non-effects one can find as a result of participation in a network is made. Assessments of eventual effects are based on interviews with network participants, on surveys with a wide range of teachers, on resource utilization and on markings of students learning in Swedish schools.

The pattern of resource utilization in relation to the markings that was given to students leaving grund schools in twenty kommuner that participated in the PBS-network was followed over three respectively four years and compared with this pattern for all kommuner in the country that had not participated in the network. The twenty network active kommuner showed to have used resources in a more effective way than other kommuner. The school results reflected in merit scores among the 16 year old students showed a larger increase in the network kommuner compared with other kommuner. Interviews with teachers, school leaders and kommun leader showed that they assessed network activities to have had substantial influence on the quality of school work. The kommun leader and school leaders especially paid attention to changes in the way schools attacked problems. They became more systematic and more open to new solutions. The rosy picture that these groups give of the network outcomes in the interviews may be explained by the investment that they have made in the network participation. As they have allocated time and money from their budgets for the participation they might look at the outcomes with somewhat biased views. The interviews with the teachers result in a somewhat more balanced outcome picture. They assess the network activities as important for their work at school as positive but they pay attention to other changes than their superiors. They especially underline that they appreciate the learning dialogue that have been one core activity in the network. They have found this kind of dialogue most useful not only in their internal team work at school but also in the work with their students. The survey data that was used for a detailed analysis of variations within one kommun that have participated in the network for several years and at large was progressing showed that two school districts had not moved forward at all while four school districts had advanced in a high speed. The three studies show an increase in changes in instructional pattern and in the students' achievements at local school level which are related to the participation in the PBS-network.

One of the features of the PBS-network is that learning takes place at one organizational level and is not controlled by the level above in the hierarchy. Developmental issues are not decided upon at the national external network meetings and the results of these meetings are not intended to be implemented at the local level by the participants in the national network meeting. It is the other way around. Common issues and problems at the local level that are perceived to be important and are subjects of the local learning networks are also transferred to the national network. In this way the national network supports the local networks in their learning processes. Transformations of insights into actions are a result of the networking at the local level.

Within the PBS-network critical discussions have been held about the balance between school external and school internal activities. If the external network is seen as the fundamental arena on which solutions are found, the school is reduced to a place where solutions are implemented. With this view the external network has to find ways to create commitment at the school to make implementation successful. If internal networks instead are seen as fundamental and an external network is used to

enhance and deepen learning, it is more a question about taking care of and using the existing commitment at each school for the shared efforts.

High quality in a school requires organizing for both short-term and long-term issues. There are two different logics behind the ways organizing takes place that Ellström (2002) describes as a logic of production and a logic of development. These two logics need to be interrelated and balanced; otherwise development activities tend to be short-lived projects isolated from everyday work. Svensson et al (2002) conclude that many schools only organize for teaching and lack to organize for development. Internal networks are one answer to this shortcoming of schools.

The three studies reported here show that schools participating in networking might gain from it. Experiences from the PBS-network have convinced me that good quality in network meetings and in learning groups benefits from the use of a structured learning process. Among the tools that have been useful are conceptual maps, structured learning dialogues based on experiential learning and the table model to find patterns in statements (Scherp, 2007).

In the PBS-network there are not only schools and kommuns that have been members but also a university. The participation of a university in the network has been helpful through its contribution of tools for inquiries and of theories. In a study of partnership between schools and researchers, Lindholm (2008) concludes that the teachers' and school leaders' competence for development has increased as a result of the interplay that was initiated by the collaboration with a university.

The university has also contributed by giving credibility to the activities in the schools and kommuns. The importance of this can be understood from the wish to be normal instead of deviant. The networking schools and kommuns work in a way that deviates from the national governing system which might be questioned if not confirmed by other institutions with high credibility.

A problem with networks built on participants with shared interests is that the learning process might be supportive and preserve prevailing conceptions. The university contributes challenging theories and perspectives that contribute to double loop learning. To be entrusted as an equal partner has strengthened the role of the teachers and school leaders as main actors in the knowledge- building of learning, teaching and school development.

The network has been of great importance as an empirical basis for the research on school development processes at the university and for validating conclusions. The focus of the network has been to contribute to knowledge-building and understanding of student learning processes and how these best can be stimulated. Instead of spreading tips about best practice, the focus has been on creating next practice that is based on a deep understanding of the prevailing situation.

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