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MUNICIPAL SCIENCE CONSULTANTS PARTICIPATION IN SCAFFOLDING PROFESSIONAL DEVELOPMENT IN A TPD PROJECT

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Abstract: It is acknowledged internationally that Teachers’ Professional Development (TPD) is crucial for reforming science teaching. However, there is a need for research on how contextual and organisational factors around schools impacts on TPD programmes. The Danish QUEST project (“Qualifying in-service Education of Science Teachers”) is organised on principles of situated learning in Professional Learning Communities (PLCs) and Network Learning Communities (NLC). QUEST-activities follow a rhythm of full day seminars, where teachers are introduced to research-based material followed by a period of collaborative inquiries locally. The research presented here focuses particularly on the municipal science consultants’ participation in developing and maintaining network activities and connections amongst the teachers. Data from pre- and post-questionnaire reveal that teachers awareness of the science consultants as a resource for their professional development increased. However there are divergent attitudes about how the consultant is a resource. Some teachers lack information about what the consultant’s competencies. Case studies of network development in four municipalities indicate that consultants are key players in coordinating activities at multiple levels in the municipality in order to maintain and develop networks. The most stable configuration of network management is when the municipal science consultant collaborates with a general administrative consultant and a school leader. This type of management team ensures that all levels of the municipal school system are effectively informed about TPD-activities in the network.

Keywords: Teacher professional development, Scaffolding, Professional Learning Networks, Science consultants’ role

INTRODUCTION

This paper presents research results from the Danish QUEST project. The research focuses on municipal science consultants’ participation in scaffolding teachers’ professional development in four municipal networks.

The Danish QUEST project - inspired by SINUS (Ostermeier, Prenzel and Duit, 2010) - is a large-scale (4 municipalities, 35 schools, 400 teachers), long-term (2012-2015) TPD project designed with reference to the effective criteria’s by Guskey (2003) and organized following principles of teachers’ situated learning in Professional Learning Communities (PLCs) (Stoll, Bolam, McMahon, Wallace & Thomas, 2006) and Network Learning Communities (Jackson & Temperly, 2007). The aim of the QUEST activities is to facilitate sustainable change of TPD in PLC’s in each of the participating schools’ and developing and maintaining networks amongst science teachers in each municipality. Project activities are divided in two phases: Phase 1(implementation) and phase 2(institutionalization) (See figure 1). In phase 1 teachers competencies are developed through participation in 4 modules. In phase 2 external support is faded so that learning communities within the schools and municipal networks act self-sustainable in relation to developing teacher professional development.
QUEST activities follow a rhythm of full day seminars in each municipality, where the participating teachers are introduced to research results and research-based materials followed by a period of individual enactment in own practice and collaborative inquiries organized by the PLCs in each school. Results on teachers’ individual and social learning in the first course module in IBSE have been reported (Nielsen & Sillasen, 2014).

Science teachers’ professional development (TPD) is currently discussed as a key factor in educational reforms (Luft & Hewson, 2014; Van Driel, Meirink, van Veen & Zwart, 2012). Although the aim of TPD might be clear there are divergent perceptions about what makes TPD effective. The often mentioned components are development of teachers’ subject matter and pedagogical skills, sufficient time and resources, introduction to assessment tools and collegial collaboration and knowledge sharing in school based contexts (Guskey, 2003). There is however a need for research on how contextual and organisational factors around schools impacts on TPD programmes. Hewson (2007) argue that the complexity of TPD is rooted in the systemic nature of professional development. Research on TPD should balance between studying the systemic nature of and different actors’ participation in TPD-programmes. Linking schools has been documented as an important element in reform processes aimed at improving science education (Richmond & Manokore, 2011). In UK the implementation of networks between schools is reported as an important systemic element for improving student learning (Jackson & Temperley, 2007). A key actor in facilitating QUEST activities at the network level is the municipal science consultant. Earlier research on municipal science consultants role in building networks indicate that the consultants role in successful network formation is characterized by personal stable contacts within the science teacher community in a municipality, availability of municipal resources to support network activities, participation in strategic planning of municipal network support, and facilitation of the development of new teaching activities within schools and between schools (Sillasen & Valero, 2013).

The research reported here set out to investigate the following research questions: What factors can be seen as hampering or supporting successful development of municipal science networks? What characterizes a municipal science consultants’ succesfull participation in maintaining networks stable over time and through crucial events? These two questions are interrelated because the consultants’ role in the network is a mixture of being pro-active and re-active. In the pro-active role the municipal consultant is involved in strategic planning, planning network activities, contact with external collaborators and innovating teaching
activities. In the re-active role the consultant is more dependent on the interplay with different actors in the network e.g. the participating teachers, school leaders and school administration staff.

**METHOD**

The research design is mixed methods (Creswell & Clark, 2007). Both quantitative and qualitative data is retrieved over a period of three years. The quantitative data is a pre- and post-questionnaire (distributed in spring 2012 and autumn 2014) with 5-point Likert-scale questions and open-ended categories focused on teachers experience from network activities and collaborative inquiries. Qualitative data include observation from the QUEST seminars. In addition four municipal science consultants wrote self-reports about the municipal network development over three years. They contained information about QUEST activities that provided opportunities for teachers to engage in the municipal network. The researcher supplemented the self-reports with interpretations about which elements hampered or supported network development. In two group interviews the science consultants were asked to co-interpret emerging patterns of network development. The *Professional Learning Community Development Rubric* (PLCDR) (Verbiest & Erculj, 2006) is used to assess the beginning and intermediate state of the networks after three years based on both qualitative and quantitative data (See appendix). In this paper the municipalities are anonymized and designated: Ho, Hs, Rd and Si.

**RESULTS**

The teachers in all four municipalities were asked about their expectations using the municipal science consultants as a resource before (spring 2012) and after (autumn 2014) the course modules had finished (Figure 2). The results indicate that network activities during the two year period of course activities in QUEST have improved the teachers’ awareness of the municipal science consultants as an inspirational resource. In 2014 33% of the teachers value the consultants as a resource to a high or very high degree. In 2012 this was only 15%.

![Figure 2: Results from questionnaire](image-url)
Supplemental input grows from analysing open answers on *why* and *what ways* teachers have experienced input and inspiration from the municipal consultants. Table 1 condenses categorized open reflection following the question: What kind of input does the municipal science consultant provide to your teaching practice?

Table 1: *Some reflections from coding open reflections from questionnaire in autumn 2014.*

<table>
<thead>
<tr>
<th>What kind of input and inspiration does the municipal science consultant provide to your teaching practice?</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consultant is a resource for improving teaching activities</td>
<td>23</td>
</tr>
<tr>
<td>Have not enough information about how consultant can be used as a resource for improving teaching practice</td>
<td>13</td>
</tr>
<tr>
<td>Scaffolds science teacher meetings at our school</td>
<td>6</td>
</tr>
<tr>
<td>Provides information about possibilities for external teaching activities in the municipality</td>
<td>6</td>
</tr>
<tr>
<td>Provides information about new teaching materials</td>
<td>2</td>
</tr>
</tbody>
</table>

Teachers’ reflections on what kind of input and inspiration the consultant provide indicate that 23% consider consultants as a resource. But 13% also indicate that they do not have enough information about what kind of support consultants can provide. These results contrast the response in figure 1, where 33% of the teachers in 2014 indicate that they value the consultants as a resource.

‘Am I a resource?’

In an interview with the four municipal science consultants in autumn 2014 they were asked whether they sensed that teachers considered them as a resource for improving teaching practice. Their response was divergent. The consultants in Ho and Hs argued that they did not consider themselves as a direct resource for the science teachers. The consultant in Hs was overburdened with tasks: “I have only solved my tasks in the network superficial in order to have a manageable working life”. The consultant in Ho argue: “My biggest success is supporting knowledge sharing amongst teachers. It is very seldom that I get a call from teachers where they ask actively for support. Communication is primarily from me to the teachers in the network.” The consultants in Rd argue that QUEST has improved the teachers’ awareness of consultants as a resource: “Because Rs municipality participates in QUEST we are considered as a resource for the participating schools and teachers. The teachers see us as a resource because they experience how we can support them in the network activities”. The consultant in Si argues that teachers see him as a resource “because I am only part-time consultant. I am also head of the AQUA science center, where many classes visits. It is in this role that teachers see me as a resource.”

Critical maintenance of networks

Supplemental insights into factors hampering or supporting network development and the municipal science consultants role in the network emerges from analysing the consultants’
self-reports on network development in each municipality. In table 2 (See below) crucial events that hampered or supported network development in the four municipalities are summarized.

**Table 2: Crucial events that hampered or supported development of science teachers network 2012 - 2014 in four municipalities. The beginning (spring 2012) and intermediate state (autumn 2014) of the organizational capacity of the network is assessed using the PLCDR-tool developed by Verbiest and Erculj (2006) (See appendix).**

<table>
<thead>
<tr>
<th>Municipality</th>
<th>Ho</th>
<th>Hs</th>
<th>Rs</th>
<th>Sg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beginning state of municipal science network.</td>
<td>Initiated</td>
<td>Initiated</td>
<td>Initiated</td>
<td>Implemented</td>
</tr>
<tr>
<td>2012</td>
<td>Enter QUEST-project. The function as municipal science consultant is established in the municipal school administration. They had none before. A teacher is recruited as consultant. Science consultant asks school principals to support teachers' participation in QUEST activities.</td>
<td>Enter QUEST-project. Science consultant asks school principals to support teachers' participation in QUEST activities.</td>
<td>Enter QUEST-project. Science consultant asks school principals to support teachers' participation in QUEST activities.</td>
<td>Two TPD projects are competing for the schools participation. Schools enter QUEST reluctantly. Science consultant asks school principals to support teachers' participation in QUEST activities.</td>
</tr>
<tr>
<td>2013</td>
<td>QUEST conference where teachers from all municipalities participate. Municipal school administration undergoing major organisational changes. The science consultant feels marginalized. QUEST conference where teachers from all municipalities participate.</td>
<td>Old science consultant leaves his job. A provisional consultant coordinates QUEST activities. A new permanent consultant is hired in the autumn. QUEST conference where teachers from all municipalities participate.</td>
<td>A second position as science consultant is established. The municipality now have two science consultants. QUEST conference where teachers from all municipalities participate.</td>
<td></td>
</tr>
<tr>
<td>2014</td>
<td>National teacher lockout and a new school reform divert teachers focus from QUEST activities.</td>
<td>National teacher lockout and a new school reform divert teachers focus from QUEST activities. The old science consultant leaves her job due to poor working environment. A new consultant is recruited.</td>
<td>A second science consultant is hired in the spring. National teacher lockout and a new school reform divert teachers focus from QUEST activities.</td>
<td>The municipal science center is downsized with one consultant due to organisational changes. Diverts the remaining consultants’ attention from supporting QUEST activities. Unclear division of responsibility and poor communication between school principals and the municipal school administration hampered support for teachers’ participation in QUEST activities. National teacher lockout and a new school reform divert teachers focus from QUEST activities. Communication and division of responsibility is restored. A new consultant is recruited.</td>
</tr>
</tbody>
</table>
### Intermediate state of municipal science network, autumn 2014.

<table>
<thead>
<tr>
<th>Implemented</th>
<th>Initiated</th>
<th>Implemented</th>
<th>Initiated</th>
</tr>
</thead>
</table>

### Beginning state

When the municipalities entered the QUEST project in spring 2012 the beginning state of the science networks was diverse.

Ho, Hs and Rd all started their network at the initiated state (See appendix). However, there were differences from the outset on what actions the municipal school administration prioritized to get the networks running. In Ho they systematically identified resources and structures necessary for teacher learning. Before QUEST collaboration between science teachers from different schools was rare. A new network management team consisting of an experienced teacher, a school principal and an administrative consultant was set up.

In Rs the municipal resources and a consultant were available for network activities. Resources were used in an insufficient way to promote teacher collaborative inquiry because the municipality did not have a policy for science teachers’ professional development. Network management was mainly top-down and there was not a shared responsibility for network activities.

I Hs sources and structures existed that could support teacher learning in the network. There was space allocated for TPD in the network. The municipal science consultant supported teachers psychologically and with collaborative inquiries. All elements were present to develop the network further.

In Sg the network was more implemented than in the other three municipalities. There was a suitable use of resources and structures for professional development activities. The municipality had a policy for TPD and the consultant supported teachers morally and contentwise. Network participants had influence on network activities and there were efforts to bring recognition and appreciation into the network-culture.

### Crucial events in network development

The science consultants self-report provided examples of crucial events that either hampered or supported network development. They also revealed information about the science consultants’ role in the network.

In Ho the network developed steadily supported by systemic elements. A key element was the network management team that consisted of a newly appointed science consultant, a school principal and an administrative consultant. Their collaboration ensured a steadiness and openness about network activities. The support of the school principal and the administrative consultant to the science consultant ensured that other school principals and the municipal school administration was informed about needs and results of TPD in the network. It helped the administrative level in Ho to keep focus on the network as a learning community for TPD. The science consultant states: “There is a mutual respect for the different backgrounds we represent. We communicate a lot to coordinate decisions and information. Because we are three persons in the network management means that we can cover for each other. It gives a higher degree of continuity in participation in decision making and wider consolidation both amongst participating teachers, school principals and the municipal school administration.”

The national teacher lockout in 2014 was a major hampering event in all municipalities. Many teachers were unsatisfied with the government intervention and lost a sense of shared responsibility and commitment in the networks. However in Ho the network recovered quickly. In an interview the municipal consultant hypothesizes: “Our close collaboration in
the network management team ensured that the teachers’, the school principals’ and municipal administration focus on network activities was kept intact after the lockout. That enabled a quick return to normal network activities.”

In Hs the municipal consultant was well integrated in the job when QUEST started in 2012. She organized network activities that participating teachers assessed to have a high quality. In spring 2013 the municipal school administration underwent a major organisational change. In this process the consultant felt that she was marginalized, because she couldn’t get the usual support from peers in her department. In spring 2014 she left her job and a new consultant was hired. This reorganisation was at the same time as the lockout. These two events created a major discontinuity in maintaining the network due to two factors. First, the new consultant was not as committed to the QUEST project as the previous consultant. Second, as in Ho the teachers lost a sense of moral commitment towards collaborative activities in the network. The result was that the maintenance of the network became top-down initiated with communication between the consultant and participating teachers being more formal than informal.

In Rs the science consultant started the QUEST project by formulating a municipal science strategy for supporting TPD through network activities. At the same time the municipality established a science resource center that offered TPD- and teaching-activities for classes. The resource center became a cornerstone in the network activities and for the consultants scaffolding activities to schools. A hampering factor was when the municipal consultant left his job in spring 2013. However the municipality was determined to continue the strategy on implementing the TPD strategy. Therefore two new science consultants were hired in autumn 2013. One of the consultants commented on their collaboration: “[It] creates a stronger synergy when we are two consultants collaborating, rather than if the consultant-role only was tied to one person. We have different roles in the network. Both of us contribute to supporting teacher teams in schools. But the teachers see the other consultant more as a resource than me because they meet her more often than me. My job is more to plan the network activities, communicate with school principals and the municipal school administration writing assessment reports etc. We have one day every week, where we coordinate communication to schools and the municipal administration. We also plan network activities on this day.” About 50% of the participating teachers in Rs reports, that they value the consultants as a resource for their professional development. The teacher lockout was a hampering effect also in Rs. However, like in Ho the network quickly returned to normal state, because the two science consultants had a close collaboration with schools and the municipal administration and a policy on continuous TPD.

From the outset in 2012 it was difficult to recruit schools to participate in QUEST in Si because there were two TPD projects competing for the schools participation. Schools reluctantly choose to participate in the QUEST project. As a consequence teachers’ commitment in network activities was divergent. The senior science consultant reflected: “The transfer of knowledge from the network meetings to science team meeting within the schools is a challenge, because in some schools it is difficult to commit all science teachers to meet. While in a minority of schools with a strong teacher culture there is a stronger follow up on network activities”. A second consultant was hired to assist with network management in an effort to strengthen TPD activities in the network. In spring 2014 the municipal support for network activities was downsized – the second science consultant was laid off – due to organizational problems within the municipal school administration. There was a power struggle between the schools principals and the municipal school director which lead to a state of balkanization in the school leadership level. This resulted in diverting teachers and school principals’ attention away from network activities. As the remaining science consultant commented: “It has been turbulent being a science consultant the last year because the
municipal school administration has been completely reorganized due to a couple of unsuccessful replacements in management and lack of coordination and communication with the schools. Hopefully things will change to the better." At the same time the national teacher lockout became an additional hampering factor that caused the participating teachers to feel no moral obligation to engage in network activities. Consequently the network was knocked back to an initial state by autumn 2014. It was time for the consultant to “reboot” the network into functioning again. In an interview autumn 2014 the consultant assess’ his role in the network over the last two years: “In the municipal school administration everybody knows me because we have discussed the science network in relation to the ongoing changes in the school system in our municipality. I am not sure though that those science teachers in the network see me as a resource. They might, because I am also head of the AQUA Science Center. But the turbulent times made it difficult for teachers to commit themselves to participate in and focus on TPD activities in the network. And by extension, experience different kinds of support that I can offer for their professional development.”

DISCUSSION AND CONCLUSION
The results presented indicate that the consultants’ successful participation in scaffolding a municipal network depends on how well the network is embedded in the municipal educational system.

The science consultant coordinates many intentions
The municipal science consultants were engaged in network activities at two different levels: in collaborative activities at the QUEST seminars and in the municipal school administration. The consultant helped organize workshops, where teachers from different schools had the opportunity to meet and engage in activities with peers from other schools and QUEST support staff. The latter helped organizing workshops about teaching materials or curriculum materials that were made available for the participating teachers to adapt to their own PLC’s. In the municipal school administration the consultants engaged in processes about developing new workshops or the municipal science strategy.

The municipal consultants’ descriptions of crucial events that support network development are diverse, ranging from recruiting a science consultant to formulating a municipal science strategy. Factors that hamper network development include unclear division of responsibilities at the leadership level in the municipal educational system, poor communication, national teacher lockout and science consultants finding a new job.

These four cases illustrates that municipal networks as a tool for TPD is a systemic process where many different actors, intentions and experts meet with the aim to improve pupils condition for learning. The consultants’ reflections on how to overcome the crucial events that might hamper the network formation indicate that they depend on support from the municipal school administration and principals from the participating schools.

Stable network management
The science consultants’ self-reports indicates that they play a key role in the managing and maintaining networks. This observation resonates with findings Sillasen & Valero (2013) and Fehr (Under submission). However networks are dynamic structures which shape, size and functionality depends on the interactions with the educational system in which they are embedded.

Analyzing the four cases of network development showed that the most stable network management proved to be a division of network responsibility between 3 actors: The municipal science consultant, a general administrative consultant and a school principal. The
exemplary case is Ho. Collaboration between the 3 actors in the network management team in Ho ensured that all levels of the municipal school system was effectively informed about TPD-activities in the network. Within the network management team the science consultant was a key actor. The science consultants’ successful management of network depended on support from the general administrative consultant and the school leader. They acted as bridgers to the administrative and leadership level of the municipal school system.

External support from QUEST to network activities was also a factor that supported stable network formation (Jackson & Temperley, 2007).

A resource for teachers?

Interviews with the consultants indicate that personal relations to other teachers in the science teacher community are a vital factor for their success in managing the network. However it seems that teachers have divergent perception about how the consultant is a resource for their development (see figure 2 and table 1). The results indicate that teachers’ perception of the consultant as a resource depends on teachers and schools being informed about how consultants can support them. Information to teachers and schools about the consultants’ competencies is crucial if they are to be considered as an asset for supporting TPD.

REFERENCES


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APPENDIX

Assessment of organisational capacity of municipal science networks

Assessment of the beginning and intermediate state of organizational capacity of science teacher network in four municipalities using the Professional Learning Community Development Rubric (PLCDR) developed by Verbiest and Erculj (2006) (See table 3). In the PLCDR there are four different phases of development: Not yet Initiated, Initiated, Implemented and Institutionalized. In the diagnostic displayed in table 4 (beginning state, spring 2012) and table 5 (intermediate state, autumn 2014) only the organizational capacity building domain of the PLCDR is assessed because the data supported this.

Table 3: Overview of the PLCDR-tool. The PLCDR consists of three dimensions: The personal, interpersonal and organizational capacity.

<table>
<thead>
<tr>
<th>PHASES OF SCHOOL DEVELOPMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAPACITY</td>
</tr>
<tr>
<td>Not yet initiated</td>
</tr>
<tr>
<td>Personal capacity</td>
</tr>
<tr>
<td>Interpersonal capacity</td>
</tr>
<tr>
<td>shared values and shared vision on learning and teaching</td>
</tr>
<tr>
<td>collective learning and shared practices</td>
</tr>
<tr>
<td>Organisational capacity</td>
</tr>
<tr>
<td>supportive structural conditions</td>
</tr>
<tr>
<td>supportive cultural conditions</td>
</tr>
<tr>
<td>shared, supportive and stimulating leadership</td>
</tr>
</tbody>
</table>

Table 4: Assessment of the municipal science networks beginning organizational capacity (spring 2012).

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Ho Overall state: Initiated Network is starting up initiatives that promote TPD.</th>
<th>Hs Overall state: Initiated Network is starting up/doing things to promote TPD</th>
<th>Rs Overall state: Initiated Network is in the wake of starting up.</th>
<th>Sg Overall state: Implemented The network is doing ok. Network is being implemented in the municipal educational system.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supportive structural conditions</td>
<td>Initiated state The sources, structures and systems that are necessary for teacher learning are identified. Professionalisation is mainly individual. Time allocated for collective interactions is increasing. Communication in network activities is rather formal.</td>
<td>Implementation state Sources, structures and systems exist that can support teacher learning in the network. There are instructional and technological support to aid teacher innovation. TPD is set up according to policy. Learning activities are offered both at collective and individual level. There is space allocated for TPD in the network.</td>
<td>Not yet initiated/initiated state Sources, structures and systems are insufficiently made use of. The municipal consultant has however identified needs for promoting learning. There are scarce examples of professional development activities local on some schools. There is not a policy for professional development. Communication in the</td>
<td>Implementation state Suitable use of resources, structures and systems in professional development activities. There is instructional and technological support. There is a policy for professional activities. Time and space is allocated on the network. Communication balance between formal and informal.</td>
</tr>
</tbody>
</table>
Communication balance formal and informal.

not yet initiated

There are attempts to bring mutual trust and recognition into professional learning activities. Co-operation is found between some teachers. Some teachers are focused on improving their teaching.

Initiated state

There are attempts to bring mutual trust and recognition into professional learning activities. Co-operation is found between some teachers. Some teachers are focused on improving their teaching.

Not yet initiated

There are attempts to bring mutual trust and appreciation into the network. There is no sense of mutual responsibility and no culture of continual improvement. Teachers work mainly isolated.

Implementation state

There is an effort to bring recognition and appreciation into the network culture. Many teachers are co-operating and aimed at improving teaching activities.

Shared, supportive and stimulating leadership

Initiated state

Municipal consultants inform teachers about network activities. (S)he sometimes ask teachers for advice on designing network activities.

A small network management team is set up.

Implementation

The Municipal Consultants support teachers psychologically and content. Teachers are stimulated to reflect on their own. Consultant inform network participants about important matter in the network.

Not yet initiated/Initiated state

Leadership in the network in top-down. Consultant inform network about network activities. Network members do not have a shared responsibility on the network activities.

Implementation state

Consultants support teachers morally and contentwise. They stimulate teachers as reflective practitioners. Network participants have influence, and in some cases there is a shared responsibility for network activities.

Table 5: Assessment of the municipal science networks intermediate organizational capacity after three years (autumn 2014).

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Ho</th>
<th>Hs</th>
<th>Rs</th>
<th>Sg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supportive structural conditions</td>
<td>Implementation state</td>
<td>Initial/implementation state</td>
<td>Implementation state</td>
<td>Initial state</td>
</tr>
<tr>
<td>Resources and structure works most of the time to support teacher learning in the network. There is instructional support for PLC’s in the schools. There is a policy about PD activities in the network. Time and space for collaborative PD is allocated. Communication is both formal and informal.</td>
<td>Resources and the network supports teachers. Teachers have sufficient instructional support. Policy that put direction on teacher professionalization is not well functioning. Communication is more formal than informal.</td>
<td>Resources and the network supports teachers. There is sufficient instructional support. The policy puts direction to network activities that support TPD. Communication balance between formal and informal.</td>
<td>Resources and the network are in place to support teachers. However professionalization has degenerated to individual teachers initiatives. Some arguing that they have no time and space for professional development activities. Other things often takes priority. Communication in the network change between being nonexistent and...</td>
<td></td>
</tr>
<tr>
<td><strong>Supportive cultural conditions</strong></td>
<td>Implementation state</td>
<td>Initial state</td>
<td>Initial/implementation state</td>
<td>Not initiated/starting</td>
</tr>
<tr>
<td>-----------------------------------</td>
<td>----------------------</td>
<td>--------------</td>
<td>-----------------------------</td>
<td>-----------------------</td>
</tr>
<tr>
<td></td>
<td>Mutual trust and appreciation characterizes the entire network. There is co-operation amongst many teachers in the network.</td>
<td>There are attempts to maintain the mutual trust and appreciation in the network. Co-operation is mainly between teachers at the same school. Diversion of teacher focus due to lockout.</td>
<td>There is widespread mutual trust and appreciation in the collaborative activities. Some network members are open towards each other. There is widespread aim at improving teaching in the network.</td>
<td>There are little mutual trust and appreciation of collaborative activities in the network. Co-operation is found between few network members. They work mostly isolated or in pairs at their school.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Shared, supportive and stimulating leadership</strong></th>
<th>Implementation state</th>
<th>Initial state</th>
<th>Implementation state</th>
<th>Not initiated/starting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consultant supports morally and content. Stimulates teachers to reflection on action. Network members are involved in decisions. Consultants discuss direction and content of network activities with teachers. School leaders are informed about network activities. Shared responsibility.</td>
<td>Network management in mainly administrative awaiting the recruitment of a new consultant. Network management is mainly top-down. The municipal school administration reforms network management to make it more efficient as TPD. Some cultural aspects are lost in translation.</td>
<td>Consultants support network morally and with content. Teachers are stimulated to reflect on actions. Involvement in network management is widespread. Network decisions are informed timely and with a sense of shared responsibility.</td>
<td>Network leadership is mainly top-down trying to initiate activities that teachers appreciate. The support from schools and municipal administration is scarce.</td>
<td></td>
</tr>
</tbody>
</table>