# ICT PROFESSIONAL DEVELOPMENT BY ENCOURAGING COMMUNITIES AND NETWORKS ACROSS FIVE CLOSELY LOCATED K12 SCHOOLS

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## Introduction

Many studies have found that participation in teacher communities is an essential part of professional development (Timperley et al., 2008). Such professional development could be described as a relational-responsive approach to change because thoughts and activities emerge inside relationships rather than outside or planned beforehand (Gustavsen et al., 2001). Most research has focused on teacher communities within schools. However, there also lies potential in collaboration across schools. For example, action researchers held dialogue conferences during a two and a half year period with more than 100 principals from a range of schools. The aim was to develop new knowledge on how to implement reforms in their schools but also to inspire the principals to use dialogue conferences as a way to structure conversations in the schools (Wilkinson et al., 2010).

Brown and Duguid (2001) argue that one of the weaknesses of the community perspective is that each community creates epistemic barriers. For example, a mathematics teacher community and physical education teacher community might describe and understand their use of ICT in different ways, although they share a common interest, i.e. to improve student learning. Thus, a key challenge is to coordinate the knowledge produced in different communities (Brown & Duguid, 2001). Individuals and communities can be connected through networks. The relationships among members of a network are looser than within a community. Although many people within a network might not know one another, they share an interest in practice and are able to share knowledge (Brown & Duguid, 2001). An example is Björn et al. (2002) who encouraged networks across 25 Swedish schools in order to support project work.

The teacher professional development literature typically focuses on teacher communities rather than teacher networks. However, there are some notable exceptions. Lieberman (2000) argues that networks might be one approach to address that school and school systems are organized bureaucratically and have difficulty changing. She suggests that networks are well suited for taking advantage of new technology and to initiate new institutional arrangements. Networks are flexible and borderless and "develop agendas that grow and change with their participants" (Lieberman, 2000; p.221). Teachers that participate in, learn from and use knowledge created in networks could contribute towards strengthening teacher professional

knowledge for teachers in general and for themselves in particular. Studies on teacher networks in online settings have described the advantage of being available anytime and anywhere, and that such networks have the capacity to meet diverse interests and needs (Trust, Krutka, & Carpenter, 2016). Hofman and Dijkstra (2010) found that factors underlying successful teacher networks are that these encourage reflection, include subgroups and network meetings with a clear focus, build a community of teachers and make it possible for teachers to apply new material and methods in the classroom.

This paper is based on a project, carried out during 2013-2015, with the purpose to encourage ICT professional development across five Swedish schools. These schools are located in a quite small geographical area, within walking distance from each other, and all activities and meetings for the teachers were conducted at these schools. The authors of this paper participated as action researchers, and encouraged the formation of a school leader community and lead teacher community. Furthermore, the authors encouraged a relational-responsive approach to change in order to create an infrastructure for development and learning, although it was up to the communities and teachers to decide more specifically what they, for example, wanted to present and discuss. The Swedish Ministry of Education and Research (2012) states that a lead teacher should spend the main part of their time teaching. They can also, for example, "... coach other teachers, initiate educational conversations, initiate and manage projects in order to improve teaching ..." (p.27, our translation).

The aim of this paper is to explore how the encouragement of communities and networks across schools could contribute to ICT professional development. We will pay special attention to the perspective of the members of a lead teacher community, who coordinated and organized the professional development efforts.

## Method

The school leader community included two or three school leaders from each school and the lead teacher community included one or two lead teachers from each school. The lead teachers mainly worked as teachers but were also expected to support and encourage ICT professional development. They organized conferences and workshops, inspired by the TeachMeet model complemented with opportunities for reflection, for the teachers in the five schools. There were about 230 teachers working in the five schools, representing all grades and subject disciplines. Figure 1 illustrates the different stakeholders in the project.
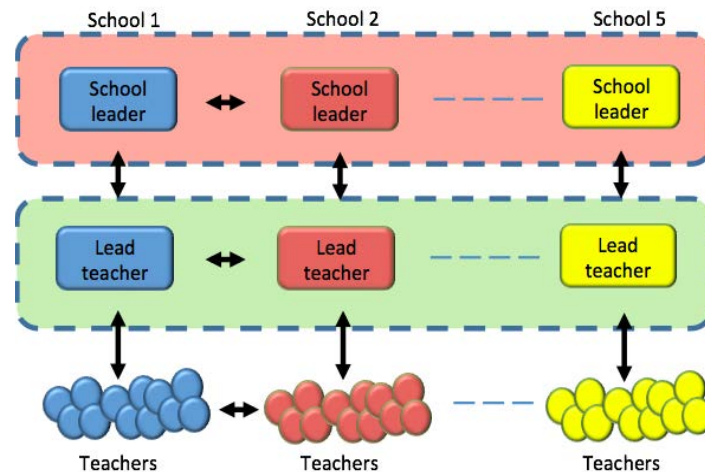
Figure 1. School leader community, lead teacher community and teachers in five collaborating schools

The authors took an active role in the project by contributing in the discussions in meetings with the school leader and lead teacher communities, while primarily being observers during the conferences and workshops. The authors took notes during all meetings and also regularly met to discuss the progress of the project. Our experience from having conducted participant observation guided this study in two ways. First, it gave us a detailed understanding of the research settings, which was necessary in order to design the interview study described below. Second, it helped us in interpreting the interview data, since we could relate to what we were told by the respondents.

All seven participants of the lead teacher community were interviewed. Five of them were female. Some of the lead teacher positions had a general focus on IT and learning, while other positions had a focus on IT in combination with a pedagogical focus, such as language development or genre pedagogy. All lead teachers mainly worked as school teachers. Some of the teachers had 20% of full-time set aside for their work as lead teachers, while others did not have time set aside. Each semi-structured interview was about one hour and was subsequently recorded and transcribed. The interview guide included a number of questions, based on the research questions of the study, but the interviewer also posed follow-up questions and allowed the interviewees to elaborate on issues of potential interest. For example, one of the questions was the following: Can you describe the relationship between the school leader community and the lead teacher community? Then, follow-up questions were necessary in order to encourage the respondents to describe this relationship in detail.

The constant comparative method was used to identify themes across the interviews (Glaser & Strauss, 1967). The data was organized according to the concepts community and network, and depending on whether ICT professional development occurred within or across schools. The empirical data was also read and re-read iteratively in order to confirm and identify other themes (Strauss & Corbin, 1997). The complementing identified themes were agreeing on a common purpose and sustaining ICT professional development across schools.

# Results

In this section, the results are presented according to the identified themes of data, i.e. the process of agreeing on a common purpose, professional development across schools, professional development within schools and how to conduct sustainable professional development across schools.

## *Agreeing on a common purpose*

All respondents described that it took a long time to make sense of the quite general starting point of the project, i.e. to explore how ICT professional development could be encouraged across five schools. They argued that projects at their school typically have a more specific predetermined purpose. For example, one previous national ICT program for schools had focused on how to become proficient in using specific software, such as PowerPoint. The respondents found it challenging to be part of a process where the participants were supposed to agree on what was to be achieved. They were also trying to make sense of what was expected from them in their role as lead teachers. Most respondents described the initial period as stressful as they knew that they were expected to contribute to the project, but they did not understand more specifically what was expected from them.

> *"I was forced to be at these meetings, even though I did not want to. Then I was told, over and over again, that this was a project that would be bottom-up." (Margareta)*

It took about six months to agree on a common purpose, which was to organize conferences and workshops that was mandatory for all 230 teachers in the five schools. These events were inspired by the TeachMeet model. The premise was that teachers from the schools would share experiences on using ICT for teaching and learning. There were also opportunities for reflection during the final part of the conferences in small groups based on educational level, subject discipline or school. The school leader community was approached to make practical decisions, such as when and where the conferences would take place.

> *"The first half year, it felt like it went nowhere. It did not lead to anything. We sat on many meetings and talked in different directions, but it led nowhere, nothing came out of it. So it felt little frustrating and a bit of a waste of time. Then when we got going with [the joint conferences], I just feel that it has been positive." (Lena)*

## *Professional development across schools*

The lead teachers described the organization of joint conferences and workshops as the main benefit of collaboration across schools. Their impression was that most teachers found these activities to be valuable. Many lead teachers also mentioned that new contacts were initiated. For example, teachers representing small subject disciplines, such as home economics and physical education, which felt isolated at their respective school, enjoyed meeting colleagues

from the other schools. The main concern was that the conferences and workshops mainly focused on basic skills, such as how to use certain software or apps.

*"Many have experienced these meetings as positive, the opportunity to sit together with others and talk about what one have done, how it worked, provide suggestions and take part of others' suggestions." (Lena)*

*"I know that home economics, I heard, has met spontaneously or talked to each other. Even the physical education, I heard now. … So I think this is positive, if [the project] has opened up new ways and new opportunities, new groups get together." (Malin)*

*"There were different opinions the last time. I think it's because there are so many who have come so far here. When they go to something they want to go and really get inspiration and new things. They are demanding it, they do not want to sit at a conference or a workshop or something that doesn't give anything immediate." (Margareta)*

The lead teachers described that the main purpose of their community was to organize these activities, i.e. conferences and workshops for the teachers in the participating school. However, they disagreed or could not provide examples of learning from each other as a result of being a participant of the lead teacher community. Thus, they mainly focused on how to organize ICT professional development for large groups of teachers, rather than improving their personal ICT pedagogical competence. Instead, the lead teachers argued that professional development mainly occurred outside the formal school context. Most of them argued that they developed by taking part of, and in one case by contributing to, teacher social networks, such as Facebook groups, blogs and Twitter.

*"I'm following many Facebook groups and get inspiration and new ideas. When I have found a new tool, I usually test it and often I conduct tests with my students, just to see: How does this tool work? How can we use it best in class? What are the difficulties? I explore and test, that is how I learn." (Lena)*

### *Professional development within schools*

Prior to conducting professional development across schools, typical ways of gaining support for ICT pedagogical support was to discuss with colleagues, ask teachers that were assigned the role ICT pedagogue and participate in workshops. According to the lead teachers, ICT professional development across schools provided new ways of learning.

*"Earlier at our school I have been the only one that has showed what I have done and how you can do. Now there is a bigger bank of knowledge to draw from." (Lena)*

When analysing the interview data, different consequences of conducting professional development across schools could be discerned within the participating schools. Several of the respondents provided examples of how the teachers at their school decided to continue working with, for example, apps that had been brought up during the conferences and workshops. Typically, this was done together with the closest colleagues. Another example was that teachers representing small subject disciplines continued to meet colleagues from the other schools.

> *"These meetings have been important and interesting. But then there is a feeling that one has not been able to train. … [The primary school] had their own workshop. … Everyone were able to work and helped each other. … And they felt 'Aha, I really know this now. It was not that difficult'". (Johanna)*

It also seems that the schools were provided with a basis for making strategic decisions, when learning more about the conditions at other schools. For example, one of the schools that had limited infrastructure, decided to provide all K12 students with a tablet and also decided that one of the lead teacher that was part of the project would work full-time supporting teacher colleagues with ICT professional development.

> *"Yes, I think the greatest benefit has been that we have been able to exchange experiences both within the school and between the schools, and I think that the frustration this creates, it also creates movement. Really, that you feel, 'we do not have tablets. No, but maybe we should get tablets then?'" (Johan)*

### Sustainable professional development across schools

The respondents were positive towards sustaining the lead teacher community over time. They also felt that they have developed a competence model that would be worthwhile to sustain and that could also be used for the support of collegial learning in other areas.

> *"What came out of this, what to preserve, is that there is a clear, simple model on how one easy as pie can organize these kinds of afternoons where we work together, with collegial learning. Just take our grid and put in content and then meet." (Tina)*

All respondents argued that the school leaders are essential in making the collaboration between the schools sustainable. Most of the respondents described that they had a good relationship with the school leaders at their school. However, the respondents did not perceive that they had a relationship with the corresponding school leader community. Each lead teacher mainly communicated with their school leader, which in turn were members of the school leader community. This led to some misunderstandings during the project and it sometimes took a long time to make practical decisions, such as when and where to schedule a conference.

*"[The management] need to decide that 'this is what we are going to do and we are going to do it because collegial learning is both important and good'. And maybe we have not found the optimal form yet, but we will continue to look, and you need to put aside time to have it, to plan it… The research project might end, what do I know, but the project 'how to develop the school?', it never ends." (Johan)*

## Concluding Discussion

The aim of this paper was to explore how the encouragement of communities and networks across schools could contribute to ICT professional development. The lead teacher community played a central role, but ICT professional development was dependent on the interplay of different types of communities and networks. The identified communities and networks are discussed below.

### School leader community

The school leaders could be described as a community with the shared common purpose to make joint decisions that were necessary in order to enable ICT professional development across the five schools. Decisions made by the school leader community included whether participation would be mandatory, and when and where the conferences and workshops would take place to make sure that all teachers from the five schools could participate. As a strategic group representing several schools, they were also able to insist that, for example, ICT implementation in the municipality was tailored according to their local needs. Thus, they created organizational structures, which have been found to be one of the enablers of teacher communities and networks (Supovitz, 2002). The school leaders gave the lead teachers mandate to manage ICT professional development across their five schools.

### Online teacher network

The lead teachers mentioned few examples of where they learnt from the other lead teachers, but primarily gained inspiration by following other teachers by using social media, such as Facebook groups, blogs and Twitter. One of the lead teachers maintained a blog, while most lead teachers seemed to follow rather than contribute to online teacher networks.

### Lead teacher community

The lead teachers could be described as a community with the shared common purpose of organizing large-scale professional development in conferences and workshops inspired by the TeachMeet model. In order for the lead teachers to organize joint conferences and workshops, they were dependent on support from the school leader community. The school leader community and lead teacher community worked independently, with little interaction between the two communities. However, in several schools, there was an ongoing one-to-one relationships between the school leaders and lead teachers, where the school leader typically encouraged and supported the work of the lead teacher, and where the lead teacher would inform the school leader about the activities of the lead teacher community. The role of lead

teachers was primarily to organize activities, rather than to share their expertise with each other or other teachers. That said, it was evident that the lead teachers continuously improved their competence on how to organize large-scale teacher professional development across schools.

### Teacher network

All teachers participated in joint conferences and workshops. The teacher could be described as a network as they were loosely connected with the common purpose of sharing experience of using ICT in pedagogical practice. The network made inequalities visible, such as that one of the schools had limited technical infrastructure, which was quickly addressed by the school leader of that particular school.

### Intra-school teacher community

Some teachers worked in intra-school teacher communities with the common purpose of improving their use of ICT in pedagogical practice, based on what was learnt during the conferences and workshops. In other cases, formal teacher teams, typically organized according to level or subject discipline, picked up on certain topics. For example, a teacher community could decide to adopt one of the apps that were introduced during a workshop. The community would discuss how they wanted to use the app in their teaching, test in each of their classes and then evaluate and report back to the community.

### Inter-school teacher network

Teachers belonging to smaller subject disciplines, such as home economics and physical education, jointly formed inter-school networks with the common purpose of sharing experience of using ICT in subject-specific pedagogical practice. These networks provided an opportunity for teachers to share experiences in their specific subject discipline, which previously had not been possible, since they felt isolated at their respective school. They spontaneously organized meetings and invited each other to their school.

This study illustrates that ICT professional development across the five schools were dependent on different types of communities and networks. For example, the intra-school teacher communities used the conferences and workshops as inspiration and influx of ideas. It was evident that the organization of joint activities also contributed to learning in unexpected ways, such as spontaneously initiated inter-school networks. Research often identifies weak positive effects on student outcomes, because teacher communities often entrench, rather than challenge, existing practices and assumptions (Timperley et al., 2008). Examples of challenging and developing the use of ICT in pedagogical practice were mainly identified in the intra-school teacher communities. These were spontaneously formed in order to implement what was learnt in the large-scale conferences and workshops in practice.

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