

Networks as platforms for expansive development – examples from a school development programme

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Abstract

In the subsequent study we examine how collective activity in networks initializes learning and change of the network itself and the participating organizations. In particular we discuss different learning stages that can at least lead to “expansive development” – a concept brought about by Engeström (1987). The research is based on an empirical study of 13 inter-organizational school networks in Germany. The networks have been created with the intention of bringing about organizational development within the schools. In our paper we refer to an activity theoretic view on learning and development (e.g. Engeström 1987, 2001, 2005; Chaiklin et al. 1999). Therefore we consider learning as individual and collective activity as described with the learning steps from Gregory Bateson (1972) and the theory of expansive learning from Yrjö Engeström (1987, 2001). Furthermore our network approach focuses on the social aspects of interaction in networks. Results of a quantitative survey assessing the performance of the 13 networks are presented (a descriptive, complete survey within 96 participants of the networks). A subsequent qualitative survey of two highly innovative networks (20 semi-structured interviews) takes into account the learning effects in school practice. The following questions were asked: Motivation and management of the network process within the participating organizations; issues to be discussed on the network platform; development process, cooperation and communication within the network, transfer from network ideas and the results of operational practice in the schools and development process (benefits and difficulties) in the schools. Our main findings distinguished two levels of consideration; the learning platform where representatives of the schools regularly meet and the operational work at the schools. The perception of how the representatives in the network learned, how the colleagues who were not directly involved at the schools learned and how the school as a whole learned was appreciated differently. Outcomes vary from “exchange of new ideas” to “implementation of school development”. The results of this study provide guides on how to design more effective learning networks. Based on the results we will develop an analytical scheme representing learning in the network platforms compared to the development processes in the schools. These results are assessed in the light of the theory of expansive learning from Engeström. The conceptual model distinguishes between network and parent organization, its interrelated learning effects and the different stages of learning and development.

Keywords

learning networks, platform model, expansive development, activity theory

Introduction

Although the awareness of the requirement of change within the system schools has been high, little is known about how sustainable intervention and innovation can be brought about within schools through collective exchange and learning beyond organizational borders. In this paper we discuss how collective action and reflection in inter-organizational networks, so called “learning networks”, may bring about organizational change and development in the operational work process. We define learning network as a space of exchange between representatives from dissimilar organizations, who gather together in a network with the intention of

bringing about new ideas and concepts which are applicable in the daily practise of the participating organizations. We distinguish between the innovative character of the network cooperation on the one hand and the degree of implementation of ideas and concepts in daily work practice on the other hand.

The traditional picture of an organization with its clear borders, hierarchies, formal rules and standardized practices no longer represents work reality. Very often work is organized in network relations that go beyond organizational borders and formal structures (Victor/Boynton 1998; Engeström 2008). Such networks lack formal rules and structures play a minor role as they are characterized by informal cooperative relations. Although networks are often created on an ad hoc basis (temporary project or task specific constructs), they can also be seen as learning contexts and repositories of knowledge where actors from different backgrounds meet. The network understanding in this paper goes one step farther in that the network is purposely brought about to enhance organizational learning and development. Our understanding of networks refers to a structural model of a platform – a mental and organizational space – where representatives of the participating organizations meet for exchange and development (Ciborra 1996; Schulz 2005). The cooperation in groups and networks is widely discussed (West 2002), however, from our view it is rarely examined with reference to the different stages of learning and development. Furthermore we see a significant success factor of network cooperation in its implementation effects on daily work. We will especially discuss this aspect and its relation to the platform cooperation. The study is based on an activity theoretic learning model (Chaiklin et al. 1999) that distinguishes between learning as mere adoption of known concepts and the development of individuals and organizations in a sense of change and expansion (Bateson 1972; Engeström 1987, 2001, 2005). We will especially show how network cooperation can lead to systems development beyond existing practice (Engeström 2008; Schulz 2008). We consider activity theory to robustly provide a relationship model between actors, its instruments and rules. Furthermore activity theory takes into account a collectively shared “object” of consideration (Engeström/Blackler 2005). The question of the shared object is of high relevance: first, to discuss network activities of actors originating from different work backgrounds (Czarniawska 2004); and second, to research the interrelation between exchange and conceptualization, and implementation of ideas in operational practice. Moreover, activity theory provides an actor-centered view in which the relationship between the communication and learning of individuals, and systems’ learning and development can be explained (Engeström/Kerosuo 2007). Subsequently we will discuss what stages of learning and development can be found in different networks and with what effects to organizational practice and what the success factors are that bring about development ideas in net-work cooperation and realization of new concepts in daily work practice.

In our study we present results from school development networks institutionalized in Germany. The programme was initiated by the Bertelsmann Foundation. In the programme “network of innovative schools” (Czerwanski 2003a) 13 “learning networks” in 62 schools overall participated. Our empirical results are based on quantitative data investigation performance of all school networks and schools participating (Czerwanski 2003b). Based on the quantitative data we carried out an in-depth survey of two networks considered to be innovative. This examination was carried out using semi-standardized interviews. The qualitative research took into account different perspectives of people directly participating on the learning platform and those affected in the schools but not personally participating the platform work.

Learning in networks through a platform model

Considering learning networks we suggest distinguishing between two layers: a “reflection platform” and the “operational practice”. The platform can be described as a mental and organizational (optional physical) space, where a limited number of people meet, act and reflect together. The platform is institutionalized and a formalized part of intra- or inter-organizational practice. The platform is separated but connected to the daily work. Platform activity can therefore be seen as ‘secondary activity’ (Wehner et al. 1996) in contrast to the “primary activity” operational work. Representatives of organizations participating in the network meet on the platform on a regular basis. Issues to be discussed derive from the operational practice of the representatives. Depending on the mutual focus of the network participants, the results of the cooperation could be an exchange of singular problems or of complex concepts on specific themes (Ciborra 1996; Schulz 2005). Once the platform participants are back at their workplace, questions arise in terms of what relevance the network cooperation has for operational activities. Therefore the outcomes from the platform level have to be discussed within the organizations participating in the network. Ideally the ideas are transferred to the specific operational situation and realized at the workplaces of the organizations participating. We view the combination between platform and operational practice as dualism, since problems are sent to the platform where the topics are reflected and assessed. Ideas and solutions are brought about, are transferred back to the organizations participating and are applied in daily work practice. Moreover, experiences of implementation can provide feedback and further

discussion on the platform level. However one should distinguish the following characteristics between platform and operational work practice: On the platform level differing view-points come together and cooperation is typified through goal oriented cooperation at a conceptual stage. Discursive processes are instigated through the clarification of contrary standpoints and through the discovery of a mutual solution. At the operational level, daily work requirements dominate cooperation. Platform outcomes are neglected or thoroughly discussed in the light of their benefits for the single organization and its operational practice. Power relations and individual interests have to be taken into account. For successful school development through network cooperation, intensive communication between the platform level and the operational practice of the organizations participating are essential. The two levels need to be balanced carefully.

An activity theoretic perspective onto learning and development

Following Engeström (1987; 2001), human activity can be described as an “activity system” – an analytical model which describes the relationship between the acting subjects, their motives (object of activity), the instruments used, and the formal and informal rules prevailing. The shared object of its subjects can be seen as constitutive element of an activity system. Considering networks, the platform and each organization participating can be described as one (or even more) activity system(s). Subjects in the network have to cross boundaries every time they switch between their roles on the platform and in operational practice (Toiviainen 2003, 2007; Kerosuo 2006). They consequently participate in different activity systems at the same time. The switching between activity systems includes a (partial) change of perspectives and objectives. Therefore in collaborative activity systems, shared objects and understandings are likely to develop over time (Engeström/Kerosuo 2007).

However, cooperation between activity systems may also bring about contradictions such as disturbances, breaks, structural tensions or different meanings due to dissimilar opinions. Activity systems therefore cannot be viewed as static entities (Engeström 2000a; 2000b; Miettinen 2000). The systems and their constitutive elements are constantly re-constructed in mutual interaction by its participants since the contradictions in and between the elements of the activity system are likely to trigger their development. Engeström (1987) focused on this aspect when developing the concept of “expansive learning”. According to Bateson (1972), Engeström makes distinctions between three levels of learning. The first one is a simple reproduction and optimization of existing practice; the second one includes the methodological aspect of “learning how to learn”. Ad-hoc and reflected problem solving in work processes can be related to such learning levels. Although level two includes a complex examination of the situation and the adoption of experiences from other contexts, general understandings and objectives are not questioned. Therefore learning level one and two may improve the knowledge of individuals and optimize organizations even though they do not change them. At the third learning level problems cannot be solved on the basis of the existing background of an individual or community. Contradictions between experiences, values, understandings, and possible problem-solving occur. Bateson defines this situation as “double-bind” (1972). Triggers for such double bind can be unexpected problems that occur in work processes, new framework conditions, or newcomers joining an existing group. These causes are characterized through the confrontation of an existing community with facts that challenge its valid understandings and convictions (Engeström 1987; 2001). Engeström argues that individuals or groups can only overcome this double-bind situation by questioning their general understandings and redefining their perception of work. Since Bateson assumes an individual perspective, change of basic understandings is likely to be an unconscious process (Schulz 2008). From a collective perspective, suggested by Engeström (2001) however, such change and development is often carried out as corporate discussion; a situation that is likely to take place on the platform level of a network. Engeström considers this cycle of expansive learning as a process of individual and collective development (ibid.). Expansive learning is described through the following steps (Engeström 1987: 189; 2001: 152): (1) Contradictions emerge through problems or interventions in an activity system that question existing practice, (2) Analysis of the situation leads to the result that the primary contradiction cannot be solved on the basis of existing understandings and knowledge - a double bind situation; (3) Activity within the system has to be redefined through questioning and changing basic understandings and current assumptions of cooperation and (4) A new model of activity that may cause additional contradictions depending on whether the assumptions taken in the proceeding step bear close examination in work practice has to be implemented.

In inter-organizational networks, learning may occur on the platform level or on the level of operational practice. On both levels each learning step can be specified. Learning on the platform level can include mere exchange and search for solutions (learning one) over problem solving methods (learning two) and finally to ideas of change for the whole system (expansive learning). Learning at the operational practice is mainly triggered through the outcomes of the platform. It can be seen as a form of appropriation of the platform ideas

and concepts in organizational practice. This relationship does not necessarily lead to a causality of learning steps as, on one hand, simple problem-solving mechanisms may lead to significant change and development within one organization. On the other hand, ideas of change and expansive development emerging on the platform may be rejected at the operational level of the single organization. Hence learning within the organizations participating in the network can also be restricted to information exchange. The platform model of learning however provides suitable framework conditions to bring about change and development, since the different backgrounds of the people participating require that a common understanding be reached and the existing opinions be questioned (West 2002; Schulz 2005).

Case study: “Learning networks”

The learning networks considered are a part of the program of “network of innovative schools in Germany” brought about by the Bertelsmann Foundation which had the objective to control school development processes in a more targeted, systematic, efficient and sustainable way (Czerwanski 2003a). Within the program 13 “learning networks” (each with 3 to 6 schools; overall 62 schools) were brought about to intensify the exchange of experience and to realize ideas. Each participating school delegated 1 or 2 permanent representatives to their network. Each learning network developed and implemented their own method of operation with a working plan, a time schedule, objectives, milestones, methods and intended results as well as communication and coordination standards such as regular meetings on the network level and mutual school visits. Each learning network focused on a specific general topic relevant for the participating schools. The topics were related to organizational development or the improvement of teaching and learning and had to bear in mind the aspect of the development of the participating school as a whole. Furthermore reflection of the outcomes of the networks was intended to be used for general discussions on school development within the super-ordinate program. Through reflection, exchange and the development of concepts on the network level, school development on the operational work level was to be triggered. That meant that discussed problems and developed concepts on the platform levels should be transferred to the schools, leading to the development of teaching concepts, the continual education of teachers and the improvement of the school organization as a whole.

Empirical survey on network performance and operational results

Methodology of the quantitative survey

In our study we will refer to a quantitative data investigation which has been carried out by the program team of the Bertelsmann Foundation in order to evaluate the network performance as a whole (Czerwanski 2003b; Geithner 2003). Data were collected through a standardized questionnaire with closed and open questions of all 96 representatives of the schools participating in the learning networks. The data analysis was descriptive. Among others, the following questions were asked: What is the added value resp. benefit of the network for the participants, the students, the colleagues and the school as organization? Which elements are important for the management of the network? How does the organization of the network work? What are problem areas and critical factors for success on network and on school level?

Key findings

Most of the representatives in the learning networks assessed the benefit of the network for their personal learning with very high (47%) or rather high (43%); only 10% assessed this question with rather low. As figure 1 shows the network participants saw in the network an opportunity to find like-minded people and to experience boosting (97%) concerning their own position. Within the network ideas and concepts were shared (95%), problems from school practice were discussed (93%) and experiences were exchanged (92%). Furthermore 91% assessed the working atmosphere on the platform level as good or very good. Although existing concepts in the schools were critically questioned on the platform level (90%), fewer concepts were collectively further developed (77%). The implementation of network ideas in the schools got the lowest positive ranking (59%).

In order to underpin the assessment of the learning network, the benefit of the network activities was asked through an open question. Answers were clustered and summarized to generic categories. The participating teachers in the network consider the main impact of the network in exchanging experience and gaining new ideas (89 mentions). The exchange of experience was also identified as an important benefit of the network for the school (29 mentions). Team building and team development are only considered as being important only from a few participants. Relating the outcomes to the different networks it can be summarized that the statements within one network are rather homogeneous; however differences between networks are considerable. The items in figure 1 such as “developing concepts collectively further” (77%) or “implementation of network ideas in the schools” (59%) were especially mentioned from two specific networks. Comparable

effects were shown in the open questions on benefits from the network cooperation. These networks were especially analyzed through a qualitative investigation that we will consider next.

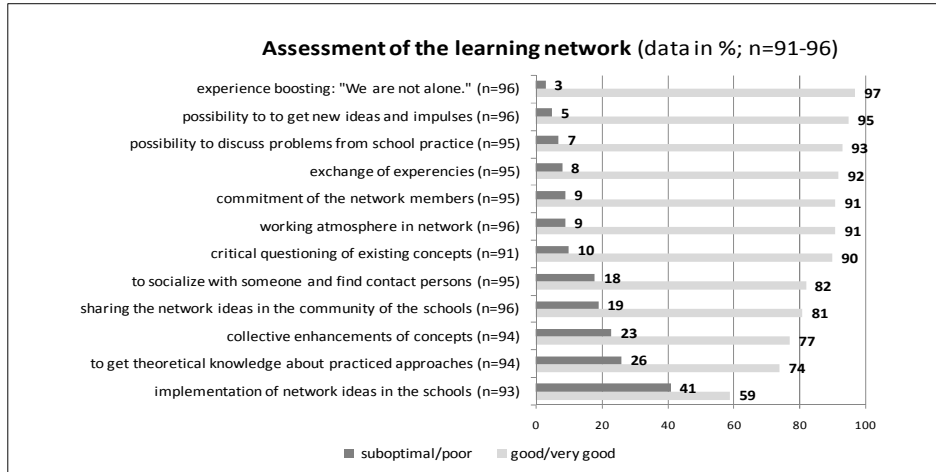


Figure 1: Assessment of the learning network through the representatives from the schools

Relationship between platform learning and the effects on operational work

Methodology of the qualitative investigation

Based on the results of the quantitative survey the two networks were chosen that provided a high level of learning and reflection on the platform level, and a high degree of implementation in the schools. We therefore studied the relationships between platform activity and its effects on operational work. Semi-structured interviews were conducted with 20 individuals who were related, directly or indirectly to the networks of study. The interviews were carried out in German language; the subsequent quotes are translated from German. We focused especially on the relationships between platform activity and its effects on operational work.

Key findings

(1) *Motivation and management of network contribution of the schools:* The motivation for participation in the network was common among the schools. Most of them state that the topic of the learning network meets their actual conceptual focus: Participating institutions expect an exchange in ideas that transcends their own organizational borders. Most of them are interested in learning how other organizations cope with similar problems and how advanced they are in their work.

“I always thought that in this way I had to tilt against windmills. I thought it should be easy if five people gather together to work something out and implement it. ... I could not manage to realize something here at this school. I rummaged around and to some extent resigned. Then I thought I would like this for colleagues as it should bring about a much higher effect of work efficiency and enhanced results with the schools. These have been my expectations.” (platform representative)

Several interviewees expected that cooperation and communication between comparable institutions would foster change in their own organizations which had not yet been able to be enforced. Significant differences were identified with respect to communication between the platform level and school. Nearly all the participants mentioned that established communication forums such as meetings and black boards did not bring forth the estimated results. However some institutions left it at that and received regular information from network representatives at standard meetings, with minor diffusion effects of network results. Others arranged further education workshops to concretize network output. Nearly all representatives mentioned that personal communication with colleagues was a key determinant of diffusion of network ideas within the schools.

(2) *Cooperation on the platform level:* Concerning communication and cooperation on the platform level the basic steps of the conceptional model could be identified: In the beginning, the atmosphere in all networks was shaped by the explanations and questions of the participants. Many different views and understandings were clarified and aligned.

“At the beginning there were differences and we didn’t know how to treat each other. Then one school presented their focus and experiences on these matters and the other schools felt a bit pushed around. However we discussed this and later we could agree on the issues.” (deputy head teacher, platform representative)

Additionally, specific issues were raised, including exchanges about operational problems. The network cooperation remained at this level for some time in discussing concrete problem areas and how to work out tangible solutions. In the following study complex problem solving was focused on. The cooperation on the platform level was further developed towards questioning existing school practice, general principles of learning or institutional framework conditions. At this stage a close understanding between participants concerning language and meanings could be identified. Most of the representatives on the platform level were in leadership and key positions so therefore they had a large impact either on the platform cooperation or on their schools, however they mentioned resource problems. Platform participants realized that their conceptual work, especially if it included developmental activities, is highly time consuming. Due to operational constraints they lacked the time required for communicating, reworking and detailing the platform results. Especially the deficit of communication determined that non-participants were able to participate in the “shared understandings” developed on the platform level. Consequently the collaboration was not able to further evolve.

(3) *Transfer from platform results in operational practice:* The relevance of platform activity for operational practice is evident in that ideas and concepts could be realized in the daily work of the schools. Empirical results illustrate that transfer and implementation is the most critical point of the learning networks. Most of the members of the schools are positive about the network. However in several schools it could be observed that network ideas fizzled out, mainly because of a lack of resources and a lack of adequate methodology of realization. For example: new ideas of how to set teaching standards and enable interdisciplinary exchange through class visits and discussion forums were developed. However teachers’ limited resources and overlaps in the teaching schedules impeded implementation. Often representatives complained that they felt left alone with their ideas and that they had the impression that their colleagues were not motivated to contribute to the realization of their concepts.

“Difficulties can often be related to those not directly involved. They listen from a distance and it is a reason for them to point out: ‘Oh dear something new again. I would have to work on something again; ’keep that away from me’.” (platform participant)

Organizational members not participating in the network answered that the ideas were not comprehensible to them and they could not see the relevance to their daily work.

“Since each school has its different philosophy and a different organizational structure it is not possible to implement everything in each school.” (teacher not participating)

Most interviewees pointed out that it is mainly the school itself that was responsible for the realization of ideas and the extent of the implementation. In some schools, ideas were consistently transferred into the situation and realized there. In these organizations the network representative was characterized as active and highly accepted. Moreover the following success factors for implementation were identified: a) High support of the management of the organization; b) Methodological concept, how network activity can be communicated and realized in the schools; c) Time and material resources were provided by the organization; d) General openness for conceptual work and organizational development beneath the colleagues.

Discussion

Comparing the different school networks we examined, we conclude that learning and development depends on two main aspects. First, the quality of the cooperation on the platform level is responsible for the discursive process and the emergence of new ideas. Second, the extent to which new ideas diffuse in each school and its accompanying local legitimization process are key indicators of success. Diffusion in operational work can be seen as a critical factor in learning and development. The empirical results show that a shared and expanded understanding of work (Engeström/Blackler 2005; Czarniawska 2004) was developed on the platform level. This shared and elaborated understanding of work reality is difficult to transfer into the operational practice of the schools (Schulz 2008). Development in a sense of expansive learning (Engeström 2001) however, requires the adoption and legitimization of different understandings. Therefore, the platform participants can be seen as key persons for the success of the network. Successful networks show that on one hand they shall provide high acceptance and a powerful position in their school and on the other hand the platform participants should contribute to the platform activity in a reflexive and creative way. Results show that the diffusion process is more successful if these attributes are not limited to a single person and that two people should represent one school on the platform. Apart from the personality and role of the platform participant and the support from

additional persons, the network can only be beneficial in terms of realization if adequate resources are provided at each school. Otherwise ideas can not be “translated” and detailed for the needs of the single organization. Even schools with enthusiastic and open-minded staff and who are involved in a creative network platform, fail to realize organizational goals if they lack resources for conceptual work. The non-realization effect despite motivated staff and promising platform outcomes also depends on the level of change: implementation of new methods and tools can be identified quite frequently and realization of system change is very rare. In comparing learning, development and change – drawing upon Bateson’s (1972) concept of learning and Engeström’s (1987; 2001) characteristics of expansive learning, we identified four different stages of learning and development. The analytical scheme considers the relation between platform activity and its effects on operational practice. Platform activity can either be categorized as “exchange” of operational problems (according to Bateson’s learning I or II) or as “development” of complex solutions (according to Engeström’s concept of expansive learning). This consideration is intersected with effects on operational practice with a range between ‘information’ about the way the organizations cope with problem areas and ‘implementation’ of concepts from the platform level (fig. 2):

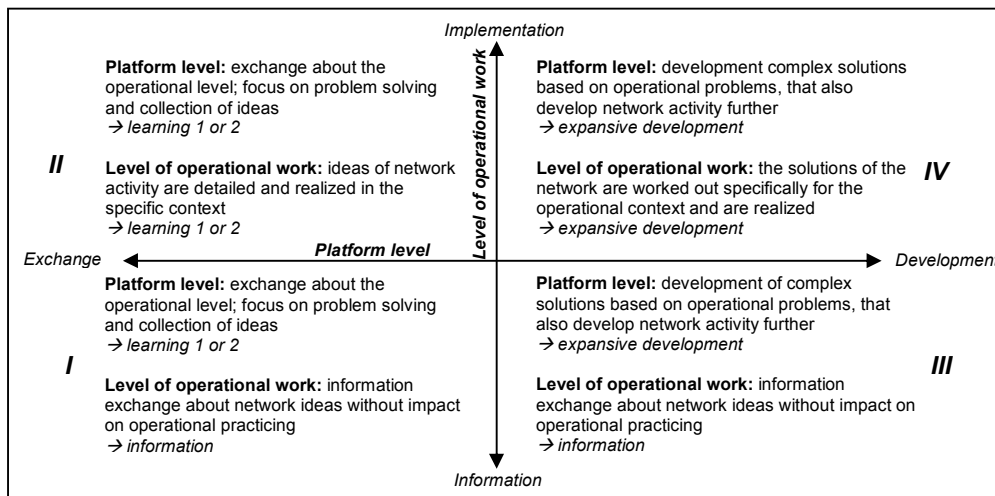


Figure 2: Analytical scheme “learning-stage” of platform activities and relation to operational work

Stage I: Network activity in the first field is characterized through exchange of the concept on the platform level and information about these concepts on the operational level. They can be seen more or less as communication networks.

Stage II: At the second stage discussions on the platform level are quite similar; however, outcomes are realized in operational practice of the schools.

Stage III: At this stage platform activity differs significantly from the ones before, since exchange is only a basis for corporate development. This is only possible however if strong cohesion between members develops, by means of developing a mutually shared understanding of operation reality and corporate development of background assumptions over time (shared object). However this does not guarantee positive effects in terms of implementation of ideas in operational practice. Two options exist: at stage three results of the network level more or less only have an informative character for operational work since the ideas on the platform are too enhanced to be adopted by the schools. In such networks people who are creative and open can be identified, but the same people are also frustrated from their daily work context.

Stage IV: The ideas are implemented. In a hierarchy of learning networks, stage four can be seen as highest level. Expansive development takes place on platform and operational level.

Based on the empirical results and the learning-stage analytical scheme the 13 inter-organizational networks were assigned to different stages. The classification however represents the highest level reached within the specific network; for instance with expansive learning this also includes the lower learning levels. Furthermore, in consideration of the differentiation of implementation within each network, homogeneity is rather high. It can therefore be concluded that schools gathered together that mainly had similar interests and understandings concerning development and change processes.

(A) The majority of networks (6 networks) can be allocated between stage I and II. This means they focus exchange on the platform level, however with a tendency to implement the solutions partially developed. The

overlap of the different fields shall display in-homogeneity within a network. In several organizations ideas are implemented, but in others they have no importance. (B) Only one network can be found entirely in stage I. This means representatives meet only for exchange and report results to their parent organizations. (C) The second majority of 4 networks can be allocated to the status of 'development' concerning platform activity. In terms of operational activity they find themselves in the intersection between information and implementation due to the same reason mentioned before. They therefore appear at the border between stage III and IV. However, implementation in this case has another quality since it is not only new ideas, but more or less complex developments that require a change in thinking at schools. Therefore this group of networks is smaller. On the platform level they reached a high degree of work and process development. Nevertheless two of these networks managed to get the ideas implemented in operational work. (D) Finally a group of two networks exists that can be identified through complex change and development processes on the platform level, which not only affect several aspects of operational work, but also the structural and societal system the schools are embedded in. These networks can be allocated stage IV. Those two networks were evaluated in the qualitative survey. The network distribution mirrors the results of the quantitative survey. For all of them exchange of methods and contents is important, however 41% criticized the opportunity of implementing new ideas. It should also be considered that 'implementation' in the survey included minor achievements in operational school practice.

In considering the development process of the networks themselves in field D it can be summarized that they started out with exchange and information (stage 1) and developed towards "implementation" (stage 2) towards "system development" (stage 4). Furthermore tendencies could be identified that the platform process moves away from organizational reality towards radical change of the school system itself. It can therefore be concluded that to innovate development hints at implementation. Hence the connection in the understanding between platform activity and operational work needs to be maintained.

Conclusion

We considered learning networks from two levels: A platform of exchange, reflection and development of ideas; and the operational practice. In our empirical survey of 13 inter-organizational school networks, organizational learning was observable on both the levels of the platform and school practice. Whilst the platform level is intensively evaluated in network research, studies of implementation in daily work practice are rather rare. Referring to the learning levels of Bateson and the theory of expansive learning from Engeström we distinguish between learning as optimization, and learning as collective and organizational development. The activity theoretic approach from Engeström provides a conceptual framework on how collective action and reflection can lead to system development. On the other hand the steps of the expansive learning cycle explain hurdles and disruptions in the learning process that result in non-development and refusal to implement.

The success of network cooperation in a sense of sustainable organizational learning depends on two aspects: the idea generating process and the diffusion and adoption of these ideas in practice. The stages of learning which can be found vary from mere exchange and information transfer to system development. However the more enhanced and complex platform outcomes are the more likely is the failure of its realization in work practice. Apart from the leadership role of the platform representative and the motivation of his or her colleagues at the schools, it is the question of resources available for realization. Furthermore it can be observed that development processes of single persons at the platform level do not necessarily bring about development processes on the organizational level. Therefore successful network cooperation requires, apart from motivation and resources also a close interrelation between platform and operational level.

The analytical scheme of learning stages provides an analytical framework to classify network cooperation in terms of learning. We see the contribution of our paper in discussing different effects of the interplay between conceptual and operational work in learning networks. We especially consider the transfer of ideas and concepts from what we call platform into daily work to be often neglected in network research. The model we suggest in this study we consider to be identifiable in various types of networks. We even regard schools with the individualistic work structures of teachers as a challenging field in terms of change and development. In applying such network learning models, initiators should also be aware that self dynamics are likely to occur rarely able to be controlled from outside without producing frustration and conflict. Since the analytical scheme we present neglects detailed differentiations within and between the networks, we see the limitation of our research in lacking detailed insights of the different network types. Further in-depth empirical research may study such effects and more importantly may focus on the process of idea implementation in operational practice.

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