Reference:

Development Curriculum for Knowledge-Based Organizations
Lessons from a Learning Network

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ABSTRACT
This article presents arguments for designing tutoring models for learning networks of knowledge-based organizations, whose tasks increasingly involve the development of expertise and knowing. The potential is examined of a curriculum, when the object of learning, in-house development, is deeply situated in the knowledge practices of organizations, is cross-disciplinary and is beyond formal education. A sociocultural understanding of a curriculum is used to analyze a model that the authors developed in collaboration with the learning network of the South Savo region in Finland. The model in question applies the theory of expansive learning and developmental work research (Engeström, 1987) by specifying it in a learning network setting. The cultural-historical activity theory approach is used to elaborate on the notion of multi-mediation as the main challenge for the pedagogical modeling of a learning network. The outcome of the analysis is summarized in terms of four tension-laden dimensions of learning to be mediated by a development curriculum.

Keywords: collaborative learning, cultural-historical activity theory (CHAT), curriculum, multi-mediation, networked learning, workplace learning

INTRODUCTION
The activities in knowledge-based organizations increasingly involve the development of expertise. Typically, developmental activity is not exclusively designated as a separate function in these organizations. It is rather intertwined in the day-to-day activity of workers who may acquire additional roles as in-house developers. This new boundary-crossing function in workplaces is a suitable topic of training in and through interorganizational learning networks.

Interest in learning networks has risen worldwide. Even though the cases reported are culturally diverse, they follow surprisingly similar patterns of activities and share similar problems. Morris, Bes-
sant and Barnes (2006) point out that learning networks need a learning agenda that goes beyond “talking shop.” They describe the network as a class that, to be successful, needs some form of curriculum and a framework to assess the achievements. But what is the potential of a curriculum for a learning network when the object of learning, in-house development, is deeply situated in the knowledge practices of organizations, is cross-disciplinary and is beyond formal education? In this article we move towards a sociocultural understanding of curriculum to analyze the model developed in collaboration with the Forum of In-house Development in the learning network of the South Savo region in Finland (Kerosuo, Toiviainen & Syrjälä, 2011).

The sociocultural approach is based on cultural-historical activity theory (CHAT), in which the notion of mediation is one of the cornerstones (Vygotsky, 1978; Wertsch, 2007). The learning and development of a member of a community is mediated by and through cultural tools and symbolic signs created in the community during its history. It is suggested that a curriculum is a cultural artifact and tool that mediates knowing and expertise in network-based organizations and learning networks.

The CHAT approach highlights that the implementation of tools involves transformation. New tools bring change to an activity and affect the users, but the tools also change when used in different contexts and as meaning is given to them by users (Kaptelinin & Nardi, 2006). The emphasis on mediation and transformation makes learning a dialectical process best captured by analyzing the developmental contradictions and tensions of the object of research (e.g., Engeström, Lompscher & Rückriem, 2005). We therefore analyze a curriculum for a learning network by means of tensions that we see as socioculturally constructed.

We expect a growing body of pedagogical network models to appear in the research literature as the activity of learning networks becomes more common in knowledge-based organizations. Our initial motivation to write this article was to share our network pedagogic solutions with other “network interventionists.” Contributing to curriculum theory is beyond our expertise; what we want to explore is to what extent our model can be seen as a curriculum for learning networks, what kind of curriculum it then might be and what kind of potential for use it may have in knowledge-based organizations. This comes close to a practical use of curriculum theory as theorizing (or modeling), which should attune closely to the given context of education (Valiance, 1982). Practice should be theoretically informed, as Michael Young (1998) has discussed. He argues that the “curriculum as practice” approach has evident limitations in bringing change to education, especially when confining practice to that of teachers in the classroom (p. 32).
We will first present the specific context and research methodology of the study. It is followed by a discussion on the meaning of knowledge-based work and organizations in this context. A review of the concept of curriculum forms a conceptual framework with which to analyze the model designed for the Forum of In-house Development. This framework is built on three sociocultural tensions of curriculum design. We are focusing on a literature that might help in understanding pedagogic modeling in multiorganizational settings. After the analysis of the model of the forum, the paper concludes with the lessons learned from designing and implementing a development curriculum for knowledge-based organizations.

RESEARCH CASE, METHODS AND DATA
We carried out two cycles of network learning with two groups of participants, each lasting 18 months, named by the regional project coordinators the Forum of In-house Development (Table 1). Its basic idea was, through inter-organizational collaboration, to train workers to become in-house developers capable of leading development projects at their workplaces. This network learning process was supported by professional local tutors giving guidance to the participants. The researchers and the project coordinator were in charge of designing and implementing the training.

Theoretically, the Forum of In-house Development was based on the methods of Developmental Work Research (DWR) (Engeström, 1987; Engeström et al., 2005) with the idea of elaborating on the approach in a learning network setting. This insight emerged through the negotiations among the project coordinators, local worklife actors, the researchers and the representatives of the funding program TYKES. As the researchers, our task was to contribute knowledge from the DWR and apply it to the forum.

The core concept of the DWR is the cycle of expansive learning (Engeström, 1987), the model of which with its many variations has been applied to a wide range of work life activities in Finland and internationally (e.g. Hasan & Crawford, 2003; Hill et al., 2007; Holt, 2008; Warmington, 2009). It has been suggested that networked collaboration adds multiple levels of activity to the cycles of learning and development (Toiviainen, 2007).

Expansive learning represents a transformative and pragmatist theory in which cultural-historically emerging and evolv- ing change and the creation of the new are essential. Figure 1 shows a prototypical depiction of the cycle of expansive learning. It is applied and enriched in the forum’s curriculum, as will be demonstrated in the analysis section.
The method of analysis is based on interpretive methods of social sciences (Yanow & Schwartz-Shea, 2006). Our qualitative content analysis does not subscribe to the formal categorization extended from the quantitative content analysis (Mayring, 2000). As Bos and Tarnai (1999, p. 666) summarize, “the first step towards category formation takes place at the theoretical level, in the formulation of content analytical hypotheses or content analytical questions.” This is done in the section below in which we articulate the three tensions to be mediated in curriculum.

The primary data is in a form of written documents comprising the table of curriculum (Table 2), the lecturing and learning materials produced by researchers, the intermediate tasks and materials collected by in-house developers at workplaces, and the memos of local tutoring. As a background material, we have video and audio recordings of the meetings. We have followed Vallance’s (1982) practical advice to curriculists to survey, analyze, synthesize, and test all knowledge available and make sense of it. The empirical data driven analysis of the interaction during the forums is outside of the focus of this paper and addressed elsewhere (Kerosuo, Toiviainen & Syrjälä, 2011).

Table 1. The participants of Forum of In-house Development I and II

<table>
<thead>
<tr>
<th>Participant organizations</th>
<th>The roles of the participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environment Centre</td>
<td>3 in-house developers</td>
</tr>
</tbody>
</table>
Mental Health Rehabilitation Home 2 in-house developers

Institute of Occupational Health 1 in-house developer

Employment Office 2 in-house developers
1 local tutor
1 senior local tutor (local tutor of F I)

Reformatory Youth Work unit 3 in-house developers
1 local tutor (in-house developer of F I)
1 local tutor and coordinator of F II (in-house developer of F I)

Occupational Safety and Health unit 2 in-house developers
3 in-house developers
2 local tutors (in-house developers of F I)

Juvenile Psychiatric unit 3 in-house developers

Dementia Nursing Home 2 in-house developers

Nursing Home 1 in-house developer

Teaching Restaurant 1 in-house developer

Catering of Hospital District 1 in-house developer

Polytechnic, catering education 2 local tutors

2 Consulting Enterprises 2 local tutors
1 senior local tutor (local tutor of F I)

Anttolanhovi (Rehabilitation Center) Project coordinator

University of Helsinki 2 researchers

A LEARNING NETWORK FOR KNOWLEDGE-BASED ORGANIZATIONS
Some of the organizations in the forum (Table 1) are typical expert communities (e.g. the Regional Environment Centre), and the participants from those might without difficulty identify themselves with knowledge-based organizations. Others, by contrast, would probably admit that although knowledge is increasingly important, they work with people providing care to their clientele (e.g. the Mental Health Rehabilitation Home). On what basis can we generally call these organizations knowledge based?
The recognition of knowledge work, knowledge workers and knowledge-based organizations is, of course, historically connected to the post-industrial turn and the developments of ICT. The early analysts of the ongoing ICT transformation pointed out that these notions were not confined to certain professional domains, but characteristic of all work in society, whether that work dealt with the new information technology or was traditional low-technology work (Nicolini, Gherardi & Yanow, 2003). As Castells (1996, p. 242) discussed, the diffusion of information technologies caused rather similar effects in factories, offices and service organizations by automating routine work and simultaneously increasing the role of direct work – not decreasing it at the expense of indirect work, as had been forecasted.

Davenport and Prusak (1998, p. 107) saw that knowledge management (KM) could not be left only to dedicated KM personnel, but that it was as well carried out in the daily activities of workers in different positions in organizations. In the same vein, the description of knowledge workers as multi-skilled by Garrick and Rhodes (2000) generally applies:

First, one needs to have an ability to perform a number of traditionally distinct occupational roles and be able to move across different work areas. This means acquiring and applying knowledge and skills across a range of jobs (cross-skilling). To do this effectively in our post-industrial work environments, employees are expected to develop pertinent and complex knowledge and skills such as in the use of electronic databases, the internet and other industrial communication and negotiation processes. Second, employees are required to develop understandings of work tasks (domain knowledge). This entails the capacity to engage in higher-order thinking skills related to problem-solving, critical thinking and research (up-skilling). The evolution of the ‘multi-skilling’ of workers has led to the notion of ‘knowledge workers’, whereby the components of cross-skilling, up-skilling, and higher-order thinking skills (including research) are merged. (Garrick & Rhodes, 2000, pp. 5-6)

More recently, Darr and Warhurst (2008) have strengthened this line of argument. Knowledge workers do not form a new class; they cannot be identified on the basis of formal degrees, as the knowledge required is very much about social capabilities and situational problem solving. Also, the presence of autonomous (knowledge) professionals beyond managerial control lacks empirical evidence.

Darr and Warhurst (2008) open up a perspective for looking at knowledge-based organizations, not through knowledge workers, but through the connectivity of occupational communities across organizations. This suggests that the cha-
racteristic networking of knowledge-based organizations enhances boundary-crossing activities by workers (e.g. Carlile, 2004; Kerosuo, 2006). It is fascinating – and, we argue, justified – to conclude that the organizations in the context of the forum become equally knowledge based when they join a learning network, which forces them to cross boundaries and start the co-construction and communication of the knowledge involved in in-house development.

A CURRICULUM FOR A LEARNING NETWORK?

The idea of a curriculum for an inter-organizational learning network is an interesting but potentially contested conception. As Barab et al. (2007) discuss, our designs for curricular interventions carry social agendas in line with the notion of the hidden curriculum that we should be aware of. Learning scientists, they argue, are well positioned to build transformative models and to develop learning and teaching interventions that have an impact both for the participants and society and for the advancement of theory.

Learning in work organizations is claimed to follow a situated curriculum (Gherardi, Nicolini & Odella, 1998). This refers to an ordered set of activities governing the process of the socialization of novices for ongoing work activities. Dedicated to the characteristics of workplace learning, a situated curriculum conflicts with the agenda of school learning and is only loosely coupled with institutionalized teaching. The situated curriculum is tacit in nature, embedded in the general habits and traditions of the community. It is difficult for the participants to bring the situated curriculum to the surface. (Gherardi et al., 1998)

Both tacit and hidden curricula refer to elements that we normally are unconscious of. Simultaneously, they carry different conceptual agendas. “Tacit” refers to naturally occurring social processes of learning in the workplace in contrast to the potentiality of the critical social agenda inherent in “hidden.” It seems to us that combining these two, embeddedness in the workplace activity and the implementation of a transformative agenda, represents a real challenge for curricular innovations. Simultaneously, it may be argued that ascending beyond tacitness towards explicit workplace-pedagogical modeling becomes necessary in multi-organizational network settings. If we accept this, we face several tensions that need mediation in curriculum design for learning networks. Based on a literature review and our own experimentation, we take up three of these for a closer analysis: mediation between a general and a specific definition of learning, mediation between learning activity and work activity, and mediation between individual and collective learning across workplaces.
Mediation between a General and a Specific Definition of Learning

Our first notion is that the uses of a curriculum range from society-level educational policy to micro-level educational interaction. In Finland, curriculum reformulation has been a standard way of responding to the changing conceptions of learning, teaching, education, knowledge, child development, a school’s mission, as well as extra-school societal challenges (Holappa, 2007, p. 39).

A curriculum, on different levels, is a central tool for change in developing societies and becomes a disputed issue in periods of transformation (Bantwini, 2010; Knebel et al., 2008; Umar, 2006). An interesting case of a community-oriented medical curriculum (Schmidt et al., 1991) suggests that innovative curriculum development may successfully involve global networks, even as it is sensitive to the needs of a targeted population and adaptive to changes in the environment as well as to rural development that encompasses economic, social, agricultural and educational needs.

Integrating many levels in and through a curriculum implies that the definitions of learning vary correspondingly and call for mediation. In our learning network case, we researchers imported an established (general) approach to work-oriented learning and development that had to be explicated and negotiated on the level of local (specific) needs (see next section). Another process of definition proceeded from the initially rather idealistic (general) views of network learning toward concrete and shared (specific) objects of development (Kerosuo et al., 2011). Our first argument concerning a curriculum is that a learning network needs an explicit development agenda that is shareable with the participants and translates and mediates a theoretical and general model to a network’s local and specific context.

Mediation between Learning Activity and Work Activity

The second notion is that major curricular innovations involve co-creation by multiple activities and stakeholders, especially when coupling learning activity with the needs of work activity or a surrounding community (Munro & Russel, 2006; Sedén et al., 2005). Typically, curriculum content that in school learning is defined by the internal structure of the disciplines contributing to it becomes problem oriented and organization specific (Boreham, 2004; Choy, 2009; Gardner, Gardner & Proctor, 2003).

Boreham’s case is a firm-specific vocational curriculum for business environments of advanced technology. Based on the concept of work process knowledge, a curriculum is designed by integrated teams that include staff from the vocational school and the manufacturing company.
Drawing on cultural-historical activity theory (Leont’ev, 1978; Vygotsky, 1978), the author points out that a theory of curriculum development requires a theory of work itself; “basic psychological operations being transformed into vocational competences only when they are mediated by socio-cultural activity in the context of work” (Boreham, 2004, p. 218).

An intensification of school-worklife collaboration, responsiveness to sociocultural contexts and an orientation towards holistic, problem-based learning disciplines are important extensions to the concept of curriculum. However, vocational curricula are still predominantly focused on defining the knowledge and skills in a given institutional setting, even if significantly reorganizing the contents of traditional school learning. In a learning network beyond the formal educational system and pre-defined vocational competencies, the situation is much more open. Nevertheless, the tension between the learning activity and work activity remains. This tension involves a vertical mediation of learning from network to workplaces and back, the problems of which have been reported in cases of inter-organizational networks (e.g. Bottrup, 2005; Morris et al., 2006). Bottrup (2005) reports that telling and listening to each others’ stories in network meetings was rewarding but not facilitative for self-reflection, the critical investigation of one’s own conceptions, or the formation of general patterns for one’s workplace.

A network and an individual workplace obviously constitute separate levels of activity, but being vertical does not imply hierarchy. Our second argument on curriculum calls for designing learning practices that mediate the learning innovations of a network to workplaces and, in turn, bring visible representations of workplace development as learning material to the network forum.

Mediation between Individual and Collective Learning across Workplaces

The third notion addresses the horizontal mediation of learning among participants, which has been recognized as one of the main profits of networking (e.g. Morris et al., 2006; Van der Krogt, 1998). The advantages of network learning have been applied to collective “learning as a network” (e.g. Knight, 2002) as well as to learning by individual members of a network (e.g. Van der Krogt, 1998). Kris Gutiérrez (2008) argues that it is possible to create a learning ecology that combines these two. Her suggestion is the Third Space, which is attentive to learners’ (individual) sociohistorical lives and cultural backgrounds, while at the same time represents a future-oriented collective development potential for the participants. This kind of learning space was designed to open the educational pipeline for high school students from nondominant communities.
The Third Space is a meeting place for a range of contexts that weave together collective and individual sense-making efforts. The key is the creation of a (partially) shared object of developmental activity as a collective motivation and orientation basis for learning. As Gutiérrez (2008) points out, the transformation of historically generated practices of schooling takes place through \textit{re-mediation} (Cole & Griffin, 1986), which includes the reorganization of learning and pedagogy, their relationships, and cultural resources for thinking. Re-mediation is implemented through the development of new tools by using the resources of language, discourse and creative, collaborative working methods.

We agree on this approach and see the Forum of In-house Development as a learning ecology built upon re-mediating tools and working methods. These tools and methods are designed to enhance the horizontal learning of participants coming from different workplaces. Planned re-mediation reorganizes what is conceptualized as in-house development both on the level of individual meaning making and that of the collective creation of a shared object of activity. \textit{Our third argument on curriculum for a learning network highlights the creation of tools and methods that orientate work towards the collectively shared object of activity and mediate horizontal learning on individual and collective levels across workplaces.}

Analyzing a pedagogic learning network model as a curriculum is our contribution to the curriculum literature briefly reviewed. The novelty of this endeavor may reside in understanding a curriculum as a sociocultural artifact that mediates not only learning goals, content units and didactic guidelines, but also mediates underpinning theoretical insights on learning and the societal context of and motive for transformation. We are addressing learning networks of a specific cultural-historical nature. They are deliberately founded among organizations that share a topic of interest and are often, but not necessarily, within the same region. They are facilitated by researchers and developers with the support of public policy programs. It follows that it is all but trivial to discuss what kind of agendas on what type of knowledge base researchers are providing to these settings.

**THE MODEL OF THE FORUM AS A CURRICULUM (ANALYSIS)**

In previous section, a conceptual framework was constructed based on the extant literature. The framework of three focal tensions to be mediated in curriculum is next applied to the data produced in the learning network of South Savo.
Mediation between the General and Specific Definition of Learning

The cycle of expansive learning (Figure 1) was chosen as the general definition of learning. It organized the knowledge to be learned by the participants for their in-house development activity, and it guided the steps to be taken in the work of the forum. Thus the learning concept informed both the content and the methods in the curriculum design. This definition of learning was complemented by our understanding of learning in networks as being multi-layered. By identifying and naming the levels of activities taking place in the forum’s work, we could add the specific definition of learning to the model represented in a redesigned cycle named the Development Radar (Figure 2). The levels are the level of the workplace, the level of local tutoring, the level of the networkshop and the level of the extended networkshop.

Figure 2. The Development Radar, the specific definition of learning (Toiviainen, Kerosuo & Syrjälä, 2009; cf. Figure 1)

The curriculum table (Table 2) displays the general and specific definitions of learning by cross tabulating the phases of the expansive learning cycle, the corresponding steps of the forum and the levels of networked activities (see columns 1 and 2, and the titles of columns 3-6). Obviously, for the participants, general definition of learning was best approached and conceived through working on differ-
ent levels and doing the tasks given in the forum.

We are not suggesting designing curricula that separate between concrete concepts for practitioners and theory for researchers’ understanding of learning. Working on the general and specific definitions of learning concerns all parties, even though the situation is not symmetrical for the designers and the receivers of curriculum. For us who are familiar with learning-theoretical concepts, the levels represented an expansion of the developmental model used and an effort to better master the setting of the forum. For the participants, the identification of levels was instrumental in grasping a difficult theoretical model of learning and development in a meaningful way (Toiviainen & Kerosuo, 2009). A curriculum that is accessible to all participants makes it a boundary object (Star & Griesemer, 1989) that provides an orientation basis to knowledge, but leaves room for interpretations and uses by different perspectives and levels.

**Mediation between the Learning Activity and Workplace Activity**

To be successful, a learning network can hardly rely solely on benchmarking and best practices types of exchanges between the members, even less so if those exchanges take place through discussions and teamwork in occasional meetings. The educational analogy by Morris *et al.* (2006) – the network as a class that needs a curriculum – may be elaborated on by pointing out that homework also needs to be done. Our leading idea is to enhance learning practices, by which the developmental issues of the participants are materially imported into the activity of a learning network. The vertical learning transfer across the network and the workplace activity is bidirectional and dialectical. A network cannot become a forum for the learning of in-house development without a material representation of the participating workplaces. At the same time, the learning of new networking practices is crucial for the in-house development at workplaces to be carried out by knowledge workers (Darr & Warhurst, 2008).

Our solution was to design a curriculum based on intermediate tasks (homework) done by the in-house developers at their workplaces with the support of the local tutors (Table 2, columns 3 and 4). The tasks formed a series of developmental actions, through which the participants planned and carried out workplace projects during the forum. Throughout the process, at the core of the tasks was learning how to make use of mirror data in the implementation of developmental projects. Intermediate tasks and mirror data constituted the work practice of the learning network and, at the same time, formed a knowledge base to support in-house development capabilities.
Gathering mirror data from work is one of the specific features of Developmental Work Research, distinguishing the setting of the forum from other participatory methods used in learning networks (Engeström et al., 1996). It means that all types of materials – video recordings, interviews, as well as written documents and statistics – may be used to mirror the present problems and developmental challenges at work. It is a demanding method, the aim of which is not just to activate the participants, but to deal with real challenges and contradictions of development and, in the case of the forum, to mediate between the network and workplace practices.

Intermediate tasks and mirror data have a transformative potential in a number of ways. They bring the developmental issues of workplaces materially to the network forum. Doing the tasks intervenes in the workplace practices and draws more people into the in-house development on the workplace level. They provide a shared object of learning for the in-house developers and their local tutors between the workshop meetings of the forum.

It was actually surprising how committed participants were to preparing the tasks throughout the process. This was possible by designing the tasks to form the backbone of the activity. The key to involvement was not the obligatoriness of the tasks in the forum, but the fact that in-house developers had engaged with demanding development projects at their workplaces. The following example is embedded in the forum’s work during the analyzing/modeling phase (Figure 1 and Table 2). It was preceded by identifying the developmental object at the workplace, planning the project, and learning about the idea and use of mirror data, to which the concepts of tension, rupture, disturbance, multivoicedness and boundary crossing refer.

Example 1. Intermediate task 4 between Networkshops 2 and 3 (Table 2)
Task 4 In-house developers: Preparing mirror data for the workplace project for
- identifying developmental tensions in the data
- understanding learning challenges
- enhancing the workplace development project
Please bring to the next networkshop (mirror data workshop) a video clip (max 3 min) or some other piece of data from your development project that you find interesting, demonstrating, for example, a tension, rupture, disturbance, multivoicedness or boundary crossing in the work activity.
Task 4 Local tutors: Tutoring the preparation of mirror data
In the tutor meeting with your in-house developers, look through the mirror data as a whole and make a detailed plan for the use of different types of data during the workplace project.
Support in-house developers in the preparation of a piece of mirror data for the next network-shop: Discuss together what kinds of tensions, ruptures, disturbances, multivoicedness or boundary crossings can be identified in the data. Choose together an interesting excerpt from the mirror data for a presentation: a video clip (max 3 min) or some other piece of data that the in-house developers will prepare.

Presenting video material in the workshop of April 4, 2009:
In-house developers, please distribute a transcription of the excerpt on paper in the workshop. Attach the background information needed.
Send a message to [the workshop coordinator] telling what you are going to present in the workshop. You do not need to send the data in beforehand!

Mediation between Individual and Collective Learning across Workplaces

Learning networks bring to mind workshops and events organized to bind participants and to make horizontal learning happen. Then, creative working methods are implemented in the hope that participants will enjoy and find shared interests that motivate them to attend more workshops. For us, this is the third point subsumed to the first and second aspects of mediation. The methods designed for the network meetings need to be theoretically grounded and provide a link across the levels of learning. This is not to undermine the primary drive of enhancing horizontal exchange and sense-making efforts between individual participants.

A rich constellation of tools is important in Developmental Work Research, but the design and use of the tools should be informed by the object of learning, in this case, learning about in-house development and local tutoring through networking.

When designing tools, we should think of the object. To avoid designing repetitive sessions, during which each participant reports on the recent developments of his/her workplace project, we divided the meetings into two parts (sometimes not sequentially but interlocked), the “Networkshop” and the “Project clinic.” The former included mostly researcher-driven lectures on the topic of the day, whereas the latter was designed for horizontal exchange across the workplace projects (Table 2, column 5).

The project clinics were the space in which we could apply a variety of methods and tools for collaborative work (cf. The Third Space, Gutiérrez, 2008). These and other tools used in the forum comprise a rich toolkit that we cannot fully discuss in the limited space of this article. The methods of the project clinics that mediated horizontal knowledge creation and exchange among the participants and across their workplaces included:

- Sparring groups and learning groups: small inter-organizational groups
based on defined roles of the members and working on the intermediate tasks prepared for the meeting. (cf. Developmental Dialogue, Toiviainen, 2003, pp. 165-193).

- Parallel sessions of the in-house developers and the local tutors, the “Interpellation of in-house development” and the “Stopover of local tutoring.” Separate groups were used selectively, usually to conclude the project clinic.

- Visual galleries: The Gallery of Developmental Work Research was implemented in the beginning of the forum, when the participants exercised the use of the DWR models by applying them to their own work activity. The Gallery of Learning Paths was presented in the final learning workshop, in which each participant prepared a personal reflection on their learning after working in a “learning group.”

In the second cycle of the forum, some of the “old” participants were able to lecture with us. Thus, for instance, a local tutor trainee who had received in-house development training in the first cycle of the forum could demonstrate the mirror data gathering as implemented at her workplace during the first cycle of the forum (Jaakko, Anne and Ella in Example 2). This was a valuable resource and probably more relevant to the participants than our demonstrations drawn from distant contexts.

Example 2. Scripts for the Networkshops and Project Clinics 2 and 3 (Table 2, column 2, Steps 4 and 5)

Networkshop and Project Clinic 2, March 4, 2009: “Use of mirror data in workplace development workshops”
12.00 Opening and the program of the day
12.10 Recap: Why analyze history, disturbances and boundary crossings?
12.20 Mirror data round – Summaries of Intermediate task 3 about planning and gathering mirror data (whole group together)
13.30 Coffee
13.45 Use of mirror data in the starting phase of development (lecture)
14.30 Mirror data examples from Forum I: Jaakko from the Employment Office, Anne and Ella from the Reformatory Youth Work unit
15.00 Assignment of intermediate task 4 (see Example 1 above)
15.10 Parallel groups: Interpellation of In-house development; Stopover of local tutoring
15.40-15.45 Closing

Networkshop and Project Clinic 3, April 22, 2009
“Identifying developmental tensions from mirror data”
12.00 Opening and the program of the day
12.15 Radar Round, 5 min/project (The researchers took notes on a shared model called the “Development Radar”, see Figure 2)
12.45 Mirror data presentation 1
13.05 Mirror data presentation 2
13.25 Mirror data presentation 3
13.45 Coffee
14.00 Mirror data presentation 4
14.20 Mirror data presentation 5
14.40 Mirror data presentation 6
15.00 "Red Thread" – Summary: Challenges of mirror data preparation (frontal “studio” group, researcher interviews)
15.30 Assignment of intermediate task 5: Preparation for the Extended Networkshop
15.40-15.45 Closing

In this section, we have analyzed the model of the forum as a curriculum that mediates crucial learning-related tensions. We focused on three focal tensions starting from a conceptual orientation basis and ending in practical working methods.

DISCUSSION
Analyzing the development curriculum in the framework of the cultural-historical activity theory approach brought mediation and developmental tensions to the focus. We are elaborating on this approach by introducing the notion of multi-mediation to understand the complexity of curriculum design. Three socio-cultural tensions were identified that needed mediation in and through curriculum. They are now renamed and elaborated on as three dimensions of curriculum design for a learning network (Figure 3).

The dimensions are the knowledge orientation base (mediation between a general and a specific definition of learning); vertical learning (mediation between learning activity and work activity); and horizontal learning (mediation between individual and collective learning across workplaces). The fourth dimension that appeared throughout the analysis is the new knowledge practices, the tensions of which derive from being multi-layered in a networked learning ecology. The tensions are not located in the opposing ends of the two axes, but each of the four dimensions remains internally tension laden, as the analysis aimed to show.

To enrich the notion of multi-mediation by a curriculum, Figure 3 summarizes the curricular solutions reported in this article as responses to the learning-related tensions. It suggests that each of them mediates learning across different dimensions, such as the DWR-based mod-
els and tools mediating the knowledge orientation base (up) and vertical learning across levels (right). This, however, should not be read too formally, as the solutions located in the four different fields are intertwined, contributing to mediation in all dimensions. What weaves them together is the development curriculum put to work through the cycles of developmental intervention.

![Diagram of knowledge orientation base and vertical learning](image)

**Figure 3. Multi-mediation through the development curriculum for a learning network**

Expansive learning is a demanding and multi-voiced process often at risk of regression. This calls for tools to support the directionality of change. A development curriculum means that it is designed in close connection to the targeted activity and redesigned through many cycles of implementation. The collaborative dialogue between theory and practice needs to be carried out in every new context. The dimensions of the model are not fixed or predetermined. They may develop asynchronously in different directions and gain new meanings. Generalizability (Gobo, 2004) does not concern single dimensions and artifacts, in the first place, but rather the idea of multi-mediation of learning in networks and the necessity of learning interventions to keep the cycle in motion.

**CONCLUSION**

We contend that an orienting tool is needed to carry out the multi-level activities in a learning network. The more cross-cultural the setting of a network forum is, the more need there is for a variety of representations to be integrated into such a tool (Davidson-Hunt, 2006). We doubt
whether purely participatory and ethnographic approaches are sufficient to motivate knowledge-based organizations in need of concrete boundary-crossing tools and practices. Our suggestion is a tool called a development curriculum, the dimensions of which we have outlined in this article. We challenge the learning network researchers and interventionists to join curriculum work, possibly elaborating on the model presented or introducing new ones to a critical dialogue.

A curriculum enhances the commitment to tenacious and long-standing learning and workplace development. Simultaneously, it represents institutionalized education, which may sound antithetical to the very nature of loosely coupled networks. However, the nationwide worklife program as well as regional actors expect continuity and societal consolidation from learning networks, which makes the creation of sustainable knowledge artifacts important. Curricula for learning networks are not just designed to promote “learner-centeredness” and “participation,” but to equip in-house developers and other staff to expand their agency across the levels of development activity. The significance of the management’s commitment to new knowledge artifacts cannot be overemphasized, which also should be written in a development curriculum even more determinedly than our case demonstrates.

Assessment of the achievements reached through the implementation of curriculum is essential (e.g. Barab et al., 2007). In the case of the forum, the achievements materialized in the developmental outcomes gained at workplaces. These will be assessed through a follow-up study on the workplace level. During the learning network process, two sessions were devoted to evaluation. The extended networkshop was based on the feedback and assessment by the workplace managers, whereas the learning workshop concentrated on personal evaluation of and reflection on learning (Table 2, steps 6 and 9). Both events brought out positive assessments of the learning outcomes.

Assessment beyond the workplace and network levels directs attention to the continuity of the learning network and to the regional sustainability of learning innovations. Also on this level there are encouraging signals from regional development agencies. How the willingness to support the development and learning activities will be mediated across the multiple levels of network activity and materialized in the development curriculum is a critical question of future.

ACKNOWLEDGEMENTS
We thank project coordinator, M.Pol.Sc. Tuula Syrjälä, the members of the learning network of South Savo and the participants of the Forum of In-house Development for the co-configuration of Development Curriculum. We gratefully acknowledge the support of the Finnish Workplace Development Programme
TYKES and cooperation with Senior Ad- 

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1 The concept of an *orientation basis* is from Gal’perin, here referred to through van Oers’s (2004) presentation, according to which “(...) Gal’perin and his colleagues realized that the process of orienting is a crucial part in the learning process as it helps the learner to gain a deep understanding in his own actions. They pointed out that it is important that pupils participate in the construction of the orientation basis for the actions. Through this participation the pupils gain insight in the reason for acting, in the various ways of performing, in the quality of the tools, in the structure of the objects etc. It is clear that constructing an orientation basis is a collaborative process in which both teacher and pupils participate” (p. 13).