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WORKPLACE LEARNING: THE INTERPLAY BETWEEN INDIVIDUAL AND COLLECTIVE DEVELOPMENT

Silke Geithner¹

Dresden University of Technology, Faculty of Business Administration, Department of Organization Studies, silke.geithner@tu-dresden.de

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Abstract: The contribution of the paper lies in discussing an integral perspective of individual and collective development. I argue that the explaining change in the workplace (e.g. Victor & Boynton 1998; Barley & Kunda 2001; Pihlaja 2005) requires a more comprehensive approach than what is available from the traditional human resource development (HRD) and organizational development (OD) perspective. I suggest a conceptual orientation on activity theory (Chaiklin et al. 1999; Engeström 1987, 2001, 2005). Therefore, the workplace could be seen as a context where people learn through collective acting and reflecting. According to Engeström learning is considered as expansive development which is brought about through contradictions in daily work and the need to change mindsets. I will refer to three case studies in medium sized firms in Germany. Using qualitative research methods I have analyzed the work and learning activity of production systems to describe the current demands of the inherent contradictions in the operational work activity. Furthermore, contradictions between the requirements of work and the actual learning methods will be described. Based on these results principles for designing learning methods will be discussed.

1. INTRODUCTION

It can be assumed that the nature of work in today`s organizations is undergoing fundamental changes (Sydow et. al. 2004; Engeström 2008). Traditional industrial systems, which are based on mass production, well-defined work roles and output goals, no longer provide an efficient mode of operation in modern technological industries (Ardichvili 2003:5). In the age of ‘mass customization’ and ‘co-configuration’ (Victor & Boynton 1998:233) the process flow is modularized and characterized through linkages integrated into customer/product-unique value chains (Pihlaja 2005:61). To understand the dynamic interactions between the product, the customer and the firm is one of the most important challenges (ibid:60). The main trend is seen to be steering away from stable markets and standardized production processes to more volatile and flexible forms. The nature of work in today`s organizations is undergoing fundamental changes characterized by a movement away from predictable, deterministic patterns to forms that are

¹ Silke Geithner, Dresden University of Technology, Faculty of Business Administration, Department of Organization Studies, 01062 Dresden, Germany, telephone: 0049 351 4633 35924, e-mail: silke.geithner@tu-dresden.de

contingent, idiosyncratic and hard to predict (Ardichvili 2003:5). This spawns long-time modifications in the organization of work and with it different competency needs and skills (Cressey et. al. 2006:12).

The work context requires human beings who are enterprising, have significant problem-solving capabilities, can operate in an environment with highly variable customer demands, capable of continuously learning new technologies and willing to work on contingent project teams and task forces (Ardichvili 2003:5). Furthermore, employees should be able to reflect on their work capabilities and their work environment; with the focus to change and develop their working processes further. Individual and collective development should take place likewise.

I argue that most of the traditional learning conceptions of HRD and OD barely meet the current learning demands in the changing worlds of work. There are two main reasons: First, most of the traditional approaches of learning in organizations either focus on the perspective 'individual' or 'organization'. Hence, individual and organizational development is often discussed separate from each other (Wilkens et al. 2004; Fenwick 2008). Bapuji & Crossan (2004), Fenwick (2008) and Song & Chermack (2008) who discuss the relationship between individual and organizational learning based on comprehensive literature reviews, state that there is an apparent lack of dialogue across these approaches and the lack of empirical research between individual learning processes and organizational knowledge creation (Song & Chermack 2008:424). Second, from a historical point of view learning methods like HRD have been disconnected from the work processes (Barley & Kunda 2001; Engeström 2005). Knowledge and capabilities are seen "as an objectifiable product of mental processes that can be detached from the minds of its thinkers and passed along" (Yanow 2004:10). Such rational standardized planning of learning concepts leads to a distance from the 'real' work context. It is predominantly the management's assumption about work requirements instead of the real work process that drives learning management. They do not have a bearing on the real work activity. In particular the problems of transfer from external learning settings in the working context are already known (e.g. Tuomi-Gröhn 2005). Traditional learning concepts are likely to neglect the workers' realities, demands and practices. The consideration of the aspects of context, complexity (Yanow 2004:201) and the social collective dimension of working and learning are proved especially insufficient.

Therefore, the contribution of the papers lies in discussing principles and mechanism of how work based learning can be facilitated by meeting actual requirements of work practice from a theoretical and empirical perspective. Demands on learning should directly emerge out of the needs of the work place and learning processes should be aimed at designing the work context. Furthermore, learning should overcome the limitations between individuals and the organization from a conceptual perspective. That means individual and collective development are to be considered as inextricably interwoven. Therefore I will suggest a paradigmatic orientation of learning and development towards a practice and activity based perspective (e.g. Gherardi 2008; Blackler & Regan 2009, Engeström & Blackler 2005; Nicolini et al. 2003; Chaiklin et al. 1999; Engeström 1987, 2001, 2005). Such approaches share actor-centred views and consider the human being and its specific situation and social environment as the object of research (Schulz 2008: 458). Hence, I see the workplace as a context where individuals learn through collective acting and reflecting.

The *cultural-historical activity theoretic approach* (Engeström 1987, 2001, 2005; Chaiklin et al. 1999) can be seen as a promising concept discussing workplace learning. Such an approach is applied in various practice theoretic research contexts as a conceptual framework and an intervention tool to design work and learning processes in organ-

ization (e.g. Engeström 1987, 2001, 2005, 2008). Activity theory focuses on the interrelation between working and learning and between individual and collective development. The ‘real’ work context is shaped with the concept of the activity system which includes the subject, the object, the tools, the community, the rules and the division of labor. Contradictions between these elements trigger development. This means that employees reflect and discuss the contradictions in a participative process which can lead to new forms of work activity and employees are able to develop their problem solving competencies simultaneously (Blackler et al. 2003:128, 2009:29).

In using the empirical methods of observation and interviews I have analyzed the work activity of production systems in *three case studies* – in medium sized firms in different industries (textile, automotive supplier, electronic) in Germany. Based on this I would like to point out the changes in the work activity, the deduced demands on learning and development and the learning models (HRD, OD) applied in the firms. Contradictions could be identified in the work activities on an operational level and between the work activities and the applied learning system of the firms.

2. THEORETICAL BACKGROUND: AN ACTIVITY THEORRETICAL PERSPECTIVE ONTO LEARNING

Activity theory is based on Lev Vygotsky`s (1978; 1987) social-history theory and its further development through Aleksei Leontev (1978), in which the meaning of the social origins of mental processes is emphasized. The mental functioning of individual people can be understood only by examining the socio-cultural processes within which such functions occur. Accordingly, activity theory emphasizes the socially and historically derived nature of practice.

2.1 Activity system as unit of analysis

Work practice resp. work activity could be described with the concept of the *activity system* (see figure 1) that includes the subject, the object, the used instruments, tools and artifacts, the specific form of division of labor and the community with their implicit or explicit rules of cooperation (Engeström 1987:78). The activity system is the basic unit of analysis. This system is a result of specific socio-historical conditions, and represents an ongoing inter-personal interaction mediated by various tools. Activity systems differ from each other through different objects and could be described on different levels of the organization – the organization as a whole or parts of it could be described as an activity system depending on the object.

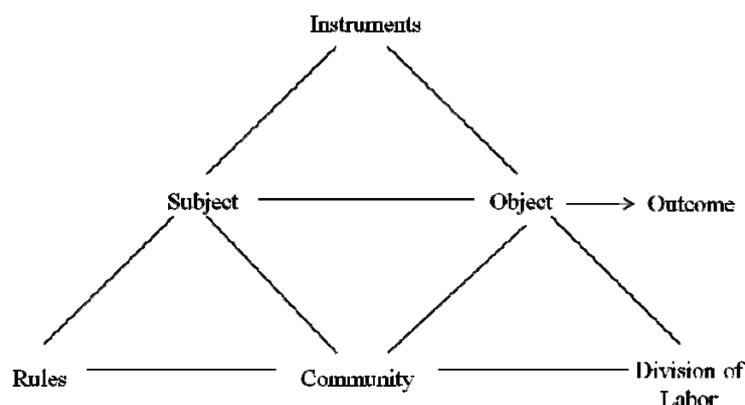


Figure 1: Activity system (Engeström 1987; 2001)

The activity system is based on Leont'ev's *three-level model of activity* (1981:210). The concept emphasizes the crucial difference between individual action and collective activity. While action is related to the goals of individuals, activity is related to collective motives. Actions are relatively short-lived and have a temporally clear-cut beginning and end. Activity systems evolve over lengthy periods of socio-historical time and often take the form of institutions and organizations. The distinction is crucial in so far that it is possible to understand individual action as part of a collective activity of a social community.

2.2 Expansive learning

Activity systems cannot be viewed as static entities (Engeström 2000a; 2000b; Miettinen 2000). These systems and their constitutive elements are constantly re-constructed in mutual interaction. Contradictions in and between the elements of the activity system triggers the development of them. From an activity theoretic view contradictions are disturbances, breaks, structural tensions or different understandings. Engeström (1987, 2001, also Vygotsky 1978) describes the development of activity systems with the cycle of *expansive learning* (see figure 1).

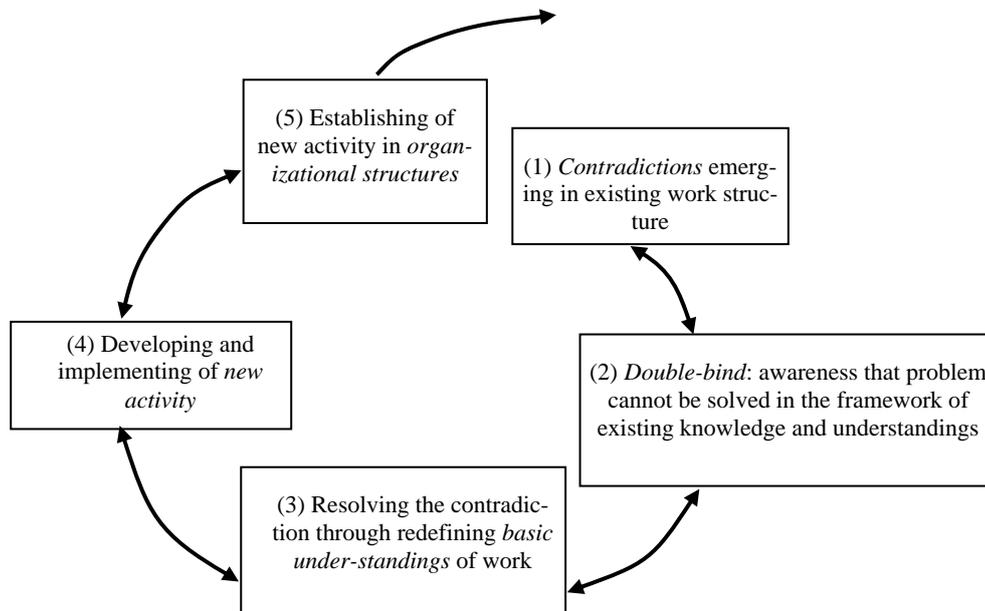


Figure 2: The expansive learning cycle (Engeström 1987; Virkkunen & Kuutti 2000)

The cycle of expansive development can be described as follows:

- (1) A primary contradiction emerges through problems or interventions in the existing community 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 occurs.
- (3) Activity within the community has to be redefined through questioning and changing basic understandings and current assumptions of work.
- (4) The new model of activity has to be implemented, which may cause additional contradictions depending on whether the theoretic assumptions taken in step 3 bear close examination in work practice.
- (5) A change in work practice cannot be seen as a singular action of one individual or

group. As noted earlier, a further contradiction is likely to occur when the new practice is established within an organization.

Engeström (1987, 2001) considers this cycle of expansive learning to be a process of individual and collective development. The single steps, however, do not have to be followed in succession. Recursive loops may occur at any point. A main source for contradictions are the relations between the elements of the activity system, e.g. between rules and division of labor, or between the instruments and the object of the community. Solving such contradictions leads to the development of the activity system and the people involved. However, one should be aware that the process of expansive learning does not necessarily lead to a positive result. It may be abandoned at any steps if contradictions cannot be solved and the community resistance avoids changing general assumptions and the realization of new activity. Although, the analytical level of 'organization' has not yet been defined (Schulz 2008:462), expansive learning as process of developing activity and activity systems can be seen as a fundamental model in integrating individual and organizational learning (Engeström et al. 2005). It is a central insight of the expansive learning model that collective (organizational) change and learning can only take place if individuals expand their assumptions and understandings beyond their existing level. In contrast to most understandings of communities of practice, the influence of a formal set of rules, legal framework, and division of labor is taken into account within the activity system model. Therefore it includes an institutional perspective of learning and development. In the study of learning and development in work processes, the model should be expanded towards structural models of complex process chains and cooperation structures (Schulz & Geithner 2010b).

3. CASE STUDIES

In using qualitative empirical methods I have analyzed the work activity of production systems in the three companies. The focus was, derived from an organizational perspective, on the deduced demands on learning and development; the learning methods applied in the firms and the organizational effects of individual learning. In this context, I strive to discuss work requirements, context specific factors and the discrepancies between organizational requirements and learning practice on an actor's level.

3.1 Research Questions and Methodology

Activity and practice theoretic research focus on in-depth investigations, which are based on observation and meticulous recording of day-to-day activities (Barley & Kunda 2001; Engeström 2005). According to the principles of activity theoretic or practice theoretic research (Kerosuo 2006) it is rather the process with its historical development and critical aspects which is explored, instead of describing the status quo of an activity. Hence practice based research follows the basic principle of action research (Lewin 1946, 1947). (Long-term) Fieldwork is the primary source of new knowledge (Kerosuo 2006:91). Primary methods to be used are participatory observation and semi structured interviews (see table 1).

research categories / questions	firm	research methods
<ul style="list-style-type: none"> ▪ situation of the firm, production systems, future challenges ▪ organization of work, actors, division of labor, communication and cooperation, rules and basic assumptions (particularities of the activity system) ▪ contradictions within the work process ▪ current learning-approach and methods such as human resource development (HRD) and continuous improvement process (CIP) ▪ sources of contradictions between learning methods and work practice ▪ major fields of learning and development to be identified 	<i>Case study 1:</i> Jersey Manufacturer	<ul style="list-style-type: none"> ▪ participatory observations ▪ document analysis ▪ 43 interviews in 2009
	<i>Case study 2:</i> Control Cabinets Producer	<ul style="list-style-type: none"> ▪ participatory observations ▪ document analysis ▪ 47 interviews in 2008/2009
	<i>Case study 3:</i> Camshafts Producer	<ul style="list-style-type: none"> ▪ participatory observations ▪ document analysis ▪ 31 interviews in 2009

Table 1: research categories and methods

3.2 Case descriptions and outcomes

Case Study 1: Jersey Manufacturer

Current Situation: The company was founded in 1970 in Berlin. After the German reunification the company moved to the federal state of Saxony, since the textile industry was one of the most important industries in Eastern Germany with a lot of highly qualified staff. Currently 200 people are employed. The firm produces fabric in a 24hour shift model (450 tons per month) for body and sleepwear, fashion, home textiles, industrial textiles and pre-printed materials using multi-filament yarns and microfibers as well as natural fiber materials such as cotton, linen and wool.

The company has to deal with different challenges as it operates in a highly competitive industrial sector with strongly fluctuating demand. Output, turnover, volume of sales and employment have continuously declined in Germany because of the high rate of growth of textile companies in developing countries and emerging markets (particularly in Asia, Southern Europe, Africa). There is a high cost pressure in the textile branch. The firm's competitiveness depends on its cost efficiency, product quality and ability to respond to customer demands. This can be reached by using the latest product technologies and the continuous development of new products. By acclimating primarily towards their customers and consumers, together with suppliers they work on new solutions for the market's growing needs. They develop products with new textile features and qualities, e.g. non-iron, fragrant, frigorific, warming, seamless or colorfast. Increasing individualized customer oriented production is necessary.

Production system and organization of work: The production process includes the following steps: knitting, first quality testing, finishing and dyeing including laboratory and final quality testing. There is a distinct division of labor on the operational level and the employees work in a three-shift system. The challenge in the production process lies in the used textile materials, which have variable qualities, since yarn-like cotton or viscose is a natural product – it differs in sizes, color and quality. Yarn is pliable (flexible and deformable) during the production process. A fully automatic production process is not possible and problem resolution management is of great importance. The CEO criticizes the high rejection rate.

Learning methods and learning demands: Experience of workers in the field of materials handling are the major success for production. This aspect can be found in the following statement:

„Of course you have what you got on a theoretic level. 70% of the knowledge is however experience how to deal with the material. Every yarn reacts differently and something different always appears. Therefore experiences are extremely important since they mean you save time. However, at the beginning you also need some theory.” (Technician, knitting)

The company is permanently challenged by the high pressure of day-to-day business, by using the latest production technology, by developing new products and by the continuous improvement of their work and production processes. The requirements of the employees will increase continuously. The single steps in the production process are strongly intertwined. Therefore, coordination is a significant process. Interconnected thinking and actions will be more and more important. However, regular meetings to discuss and develop coordination activity rarely happen – only in the case the product quality problems appear. In case of operational problems employees mainly refer to their superiors. Problems and errors are not systematically analyzed in and between the involved teams. Additionally, the interviewees criticized the information flow between the departments of the company. Furthermore the majority of the workers on the shop floor do not know their customers or the final product.

“There is a lack of communication. If we get a new machine we only get it by chance. You don’t know why and what for. You have to search for information on your own.” (Salesperson)

On the one hand simple tasks become more and more standardized; but on the other side in case of problems or changes they do not feel sufficiently prepared.

“[...] from year to year more and more monotony, only processes, known processes, you don’t reflect you just do” (Dyer)

Employees have little scope for development and design of their work environment.

“Many are afraid to make decisions, because they believe they will be held responsible for failures.” (Supervisor Production)

Furthermore, the assembly-line workers criticize that communication is based on instructions and that they are not encouraged to reflect on their work or to suggest improvements:

„People on the shop floor are just placed at their machines, they are there to work. However, since they don’t know why they do it and why the fabrics should be like that how can they be able to work and to contribute?” (Supervisor Equipment)

The current HRD system is too reactive and triggered by events. Technical training classes dominate. No outstanding function is defined for the HRD or OD procedures. In the personnel department the firm only has one person who is predominantly in charge of payroll accounting.

“I am the only person in the HR department. I organize trainings, do the payrolls and solve problems between workers. The big decisions in staff development are made by the general managers themselves. Especially managers go there and say I would like to do this or that training.” (HRD manager)

The respective leaders are responsible for staff development. However, these leaders are overwhelmed by the daily business. The vast number of employees in the shop floor has

never participated in training. Therefore, the potential of the employees to reflect and to re-create the work processes and their work environment is not being used in a satisfactory way in the company as of yet.

Case Study 2: Control Cabinets Producer

Current situation: 1996 after the German reunification the firm emerged out of a large technology company. The firm develops and produces control cabinets for production machines and technical constructions for more than 160 customers (e.g. automotive manufacturer). About 250 people work in the control cabinet production area. Anyone who operates in the highly competitive environment of control cabinet production needs to offer their customers something special in order to be successful. The firm distinguishes from their competitors by covering the entire value-added chain: They collaborate with their customers very early in the development phase and if required, they can produce complete automation concepts. Increasingly important is the production of small series and one-offs. In such cases efficient planning and production is particularly important. Hence, the company endeavours to accelerate work operations and respond quickly to differing orders and customer requirements without compromising its high quality standards. The challenges of the firms lie in distinctive customer orientation and in a higher product complexity due to reduced size and an increasing number of components in the control cabinets. In addition, the minimization of the lead time is a decisive factor in control cabinet manufacturing. The individual customer-specific manufacturing, dependence on the date loyalty and the management of errors are the most important challenges.

Outcomes production system and organization of work: The firm produces in two different plants: the main plant includes a new shop floor and the remote production site consists of old buildings with sub-optimal production conditions. Its reason for the remote production site is to provide flexible manufacturing resources. The production process is very complex and includes more than ten single steps: coordination with the customers, order management (conceptualization, consulting), engineering, logistics material, mechanical production, electronic production, testing, logistics of delivery, assembling and the initiation into service.

“I would even say that half the work is clarification about the differences in processes because we do not have a standardized commodity business. But this is our job.” (Production manager)

In both plants the complex production process requires an exact coordination between the involved teams such as the order management, production line or mechanical testing. But between the processes in one plant as well as between both of the plants there are difficulties in coordination, especially in the flow of the materials and information:

“The raw materials stock is still at the main site. You cannot just quickly go there when a part is broken or if one is missing. Organization is even more necessary.” (Staff office, remote production site)

“I would like more far-reaching information. If a person really wants to have information, that person really has to take care of getting it himself I think.” (Team leader, remote production site)

“The information explosion is very large. The quality of the information could certainly be improved too. The important thing is that a person doesn't have to ask about every little thing. Information processes could be more effective and flexible.” (Team leader, logistics)

Moreover, as way of increased flexibility the firm cooperates with many other firms that either produce the mechanical cabinets or the control cabinets as a whole. These cooperating firms are located within the same buildings and sometimes even within the same production shed. Organizational borders are difficult to identify and not clear for the employees. The firm often criticizes the quality of the products and the adherence to delivery dates. Additionally a lot of temporary workers are used.

“The cooperation is quite slow. They're just not as open as when I go to my own people, who can tell me the same things. Among the partners the contact person is always the boss. The workers are always telling me they shouldn't tell me anything and shouldn't even be communicating with me.” (Employee quality control)

“With the cooperation partners, I think it is just harder to enforce an understanding of the fine-tuning for finest quality, which I have as the highest requirement. The partners have a different comprehension of what that means I think.” (Team leader production)

Outcomes learning methods and learning demands: The production processes as well as the work processes are very complex with many interfaces and borders. Furthermore, from the employees' point of view the tasks have become more and more extensive and multifaceted. The proneness for error has greatly increased. However, the employees do not feel sufficiently prepared for these changes and feel as though they have been 'thrown in at the deep end'.

“I have learned a lot on my own by 'learning by doing' and simply made decisions. At some point it will be clear as to whether it was the correct thing to do or not. If it wasn't the right decision, we'll have to make the necessary changes.” (Team leader, logistics)

“An employee will most often lack the necessary preparation.” (Employee administration)

Currently, training focused on individual jobs. The focus is on technical and professional qualification that neglects communication and cooperation aspects. Furthermore training does not correlate with the process chain but considers traditional department structures. Therefore, the temporary workers and the employees of the partners involved are not integrated in the learning process and hence do not have the overview of the whole process chain. They lack background knowledge and understanding about the context and interrelations.

“We cannot integrate a new employee in one or two days. It is highly customized.” (Employee order management)

“We actually have fewer team meetings. With the present 40 temporary workers, there is too little time to worry about such things. They want to know what they need to build, how much time they have to do it in and everything else are less important.” (Team leader production)

In addition to classical training the company has a specific the CIP program. Participants in this program are primarily managers and team leaders. More than half of the surveyed workers denied their participation in the CIP programme. The workers are well aware that there is such a program, but cannot explain what's behind it.

“Yes, CIP, we can submit suggestions. I cannot tell you what that CIP program means. In case we have improvement suggestions or ideas for facilitation we submit them.” (Production staff)

Case Study 3: Automotive supplier

Current situation: The firm produces engine parts for the international automotive industry and is a world market leader in assembled cylinder head parts; since they own the patent on a specific mounting technology. This patent provides a cost effective manufacturing method and a low weight product. The firm belongs to a group of five firms under the roof of a holding. Nevertheless, the considered company represents mid-sized structures. Production started in March 2007 and was motivated through the demand of one of the important customers located in the region. Additionally the car-manufacturer out-sourced the finishing process of the cylinder head parts (one core step of the production processes) to this company. About 20 workers were absorbed as a consequence of the sale. The production volume of the company is directly linked to the actual demands of the car-manufacturer. Therefore, production and work processes need to be flexible depending on the orders of their customers. In 2011 the company will establish two new production lines for new customers. More workforces will be necessary. Currently 85 people are employed, including 20 in research and development (R&D). R&D is of great importance for the firm. Therefore, the focus of activity is both on the production of cylinder head parts and on the research of possible new developments related to cylinder head functionalities. At the strategic level the current challenges are attracting further customers and the expansion of R&D with the task to expand the product functionalities since the original patent expires in a few years.

Outcomes production system and organization of work: On the shop floor there are four different manufacturing cells: part production, assembling, turning and the grinding line. Only the part production and the assembling are related and subsequent process steps. That means there is no consistent process in the manufacturing. The turned or grinded products were manufactured in one of the other companies of the group. At the start of production in 2007, 20 workers from the customer were absorbed and many people were employed at the same time. In the field of R&D it is striking that the basic research is to take place at the site, the prototyping at another location and then the production is done at this site or in other locations. In the process, both in manufacturing as well as in the R&D there is therefore various dissension. The employees have no knowledge of the overall process. Therefore, the firm has several integration and coordination problems.

“In the manufacturing plant each one operates for himself. That’s the fact because everyone cares about his own stuff. There is no team feeling.” (Production manager)

“I do not like that I am alone at the assembly line. It is very isolated.” (Production worker)

“The cooperation depends on the departments, since especially the R&D people are in their own world. Sometimes they lack understanding of other things.” (Administration manager)

Outcomes learning methods and learning demands: From a learning perspective crucial questions are: How can the employees grow in the work context and how can workers grow together? How can a shared object of work be developed which includes shared knowledge and understandings about the work? Hence the building of efficient cooperation relations (teambuilding) and collective development processes (role taking and making) are major requirements.

“Problems identified should be pursued more intensively. The information flow between production and planning needs to be improved. Only well qualified staff maintains the quality of products.” (Team leader production)

Currently the HR-department uses training plans with every person on display. The plans include all necessary process steps to produce and deliver the products and have to be implemented by the workers within one year for the adjustment to a new job. The supervisor is ultimately responsible for the training of workers but the HR-managers are not informed about the proceedings. Furthermore, the focus is on technical and professional qualification.

“For me, it is part of their work. They have to do this. We do not make it so clear. This is perhaps even stupid but I just go ahead and do it. I think they know that. But I do not know exactly.” (HR manager)

“We have to learn teamwork in the field. Each one understands how he creates conflicts. How can I understand my conversation partners especially in this cross-site collaboration? Team training has not yet been implemented. Thus, we have a lot to work on. This allows us to solve cross-site conflicts.” (Head of R&D department)

The results of the interviews show that human resource development (HRD) and continuous improvement process (CIP) is often neglected and stands behind operational work. Learning depends on individual initiative however, adequate resources for coordination and support are lacking.

“I would like to continue to educate myself. Yes, I have already communicated that fact. So far, nobody responded.” (Supervisor)

“There is a strong need for training which has already been required at different places. CIP suggestions should be taken seriously and not rejected due to reasons which are not comprehensible for us.” (Production worker)

“I deleted suggestions for the improvement process after I wrote them because they do not interest anyone here.” (Production worker)

The employees see several improvement opportunities in their working area, but suggested ideas for the continuous improvement process have not yet been implemented. Furthermore, the employees often have to work under pressure and in their point of view they feel insufficiently educated to meet the demands of their work without problems and at all times. Particularly, mutual support to learn the new job was missing.

“We would prefer training rather than strictly ‘learning-by-doing’.” (Production worker)

3.3 Case studies: Discussion

The case studies represent individuality and complexity of the work processes. Process steps are interwoven and require intensive coordination and process communication. The ‘real life’ work processes differ from formal structures and inter-organizational borders (e.g. Engeström 2008; Wenger 2000). Informal cooperation structures such as activity systems can be described (Adler 2003; Engeström 2001, 2005, 2008; Sydow et al. 2004). The units of analyses and therefore the learning focus should depend on these informal structures since the formal structures and layouts rarely mirror the cooperation paths and activities. Therefore shared objects of activities are difficult to identify and to explicate. Nonetheless to bring about individual and organizational development through work based learning activity which takes into account required instruments, rules and shared labor, the shared objects of activity need to be identified (Virkkunen & Kuutti 2000).

The three companies are entirely aware of the meaning of staff learning. They see the direct link between individual learning and organizational development. Their learning

strategies, however, mainly focus on the individual. Too little effort is taken to find out adequate subjects of learning and objects of cooperation. However complexity of work practice shows that such identification is nothing more than trivial and requires some analytical and empirical effort. Consequently learning merely remains an adoption of actual demands neglecting the aspect of (collective) development and change (Ardichvili 2003). Furthermore work demands prove that individual development, problem solving and reflection capabilities are required (Boud et al. 2006). These are rarely covered through the learning strategies within the firms.

The lack of shared understanding is considered as being crucial in the case studies, however apart from information actions little effort is taken to overcome these deficits, especially in terms of far-reaching shared assumptions about the motive of work. Hence training does not focus on major demands. As a consequence workers improve their capabilities through learning by doing despite being dissatisfied with its effects. On an organizational level learning as well as conceptual work effects are rarely reflected and reified. The lack of awareness of the realistic cooperation relations and of the shared objects and of institutionalised and open reflection, where different functions and levels are involved, makes it rather impossible to identify, explicate, analyze and discuss contradictions and understandings. Nevertheless such a procedure can be seen as essential for expansive learning and thus organizational development. As a result learning remain unevaluated and thus the (tacit) property of individuals. This does not mean that organizational development does not take place, but that the potentials of organizational learning are not exploited since individual learning is not aligned with organizational development procedures. Hence due to the inadequate structures and the individualistic understanding of work and learning the companies fail to use their chances for staff learning in a sense of development and therefore for organizational change and development.

In interpreting the cooperation relations with the analytical model of the activity system, the three case studies however, show that to a great extent significant contradictions exist between staff qualification and work requirements: The applied tools for individual learning (training plans) and organizational development (Continuous Improvement Process) do not complement one another. Learning and development of the organization is not a relevant object on the operational work level or on the management level. Objects are reduced to output, process (product delivery) or person (staff qualification) oriented.

The firms include a bundle of different process chains meeting individual customer's demands. Therefore the focus of the development should not mirror the organization as a whole, since demands of the process chains differ significantly. Therefore it is again the object of consideration with the affiliated activity system which has to be identified to figure out the adequate unit for learning and development (see also Virkkunen & Kuutti 2000). Hence learning strategies should focus on the objects, communities and process chains rather than the firms as a whole.

4. CONCLUSION AND IMPLICATIONS

It can be finalized that in the three case studies the practice of learning as training sessions or learning by doing does hardly meet the requirements of the work practice. The development concepts fail to meet work reality and to bring about a collective reflection and development process. Learning is often related to the acquisition of knowledge and not how to act collectively within a specific context (e.g. Yanow 2004). Especially the systematic acquisition of social competencies that would enable employees to communicate and coordinate adequately is neglected. Learning is related to (external) training classes. Learning at the workplace is mainly unsystematic, un-reflected and operational

managers are in charge and lack time and coaching knowledge. Additionally hardly any systematic feedback loops on outcomes and relevance of learning for operational practice exist. On a higher management level however, the strategic awareness subsists that staff qualification contributes to organizational development. Therefore the case studies show that methodology, which could bring about learning activity and therefore organizational development, barely exists within the case companies. Current learning applications in HRD and CIP can contribute to a collective resp. organizational development process but only in a limited way. Furthermore, organizational development and individual learning are rarely connected in an adequate way.

The case studies also show that it is not a specific elaborated learning curriculum which would solve the problems on learning but the lack of a general understanding and awareness of learning as a collective activity and therefore organizational development (and its implementation) within the companies. Hence it is the question of how learning activity and development can be embedded in practical work and be reflected on due to the requirements taken out of the work context. Further case studies show that organizations need support to develop a basic understanding of learning activity as organizational development, and to apply adequate instruments that support collective learning.

The results of the research can be summarized as follows (see also Schulz & Geithner 2010b):

- Learning takes place within a specific context such as a process step, a field of cooperation, or a production (Lave & Wenger 1991), which is appropriately described through the model of activity system (Engeström 1987, 2001, 2005).
- Learning leads to the development of individuals and work systems or process steps if contradictions in existing activity occur and basic understandings of work processes are changed. Contradictions between the various actions and artefacts of work can be seen as nucleus cells of organizational change and development.
- Learning by expanding is likely to lead to change in activity and therefore in forms of collaboration, structures, artefacts and entire work systems. It can therefore be seen as organizational learning.
- Activity systems interact with each other and envelop each other, such as the core production process with administrative support processes and supply processes. Change within one activity system effect others surrounding (see Kerosuo 2001; Kerosuo & Engeström 2003).
- Activity systems are embedded in a set of formal structures and rules: organizations, networks or ventures. Different power relations between activity systems exist within the organization (Lompscher 2004).
- Organizational learning – namely change and development – requires the expansive development of the individuals involved in the organization or network. Hence a mere adoption of new organizational principles or technology on the operational work level can rarely lead to change and development at the institutional level. It is instead the collective change of general assumptions and understandings followed by the change of activity that brings about organizational learning. In a SME such a process is likely to involve companies as a whole, in large corporations most likely only specific fields are affected, such as business units or process chains.

I see work based learning not as being reduced to un-reflected learning by doing emerging out of practice (e.g. Lave & Wenger 1991; Brown & Duguid 1991) but as dialectics between practicing, reflecting and reifying (Schulz 2005). While acting, practitioners are put in a position to re-create their practice. Therefore learning models and methods need to include learning loops of reflected practice through corporate acting beyond

hierarchical and structural borders, discussions, mirroring, and collective creating of work contexts. Learning activity should furthermore be considered as a collective process, which aims to single out contradictions in the work process. In this context, a platform model of learning (see figure 3) could be a way for individual and collective learning (Schulz & Geithner 2010a, 2010b).

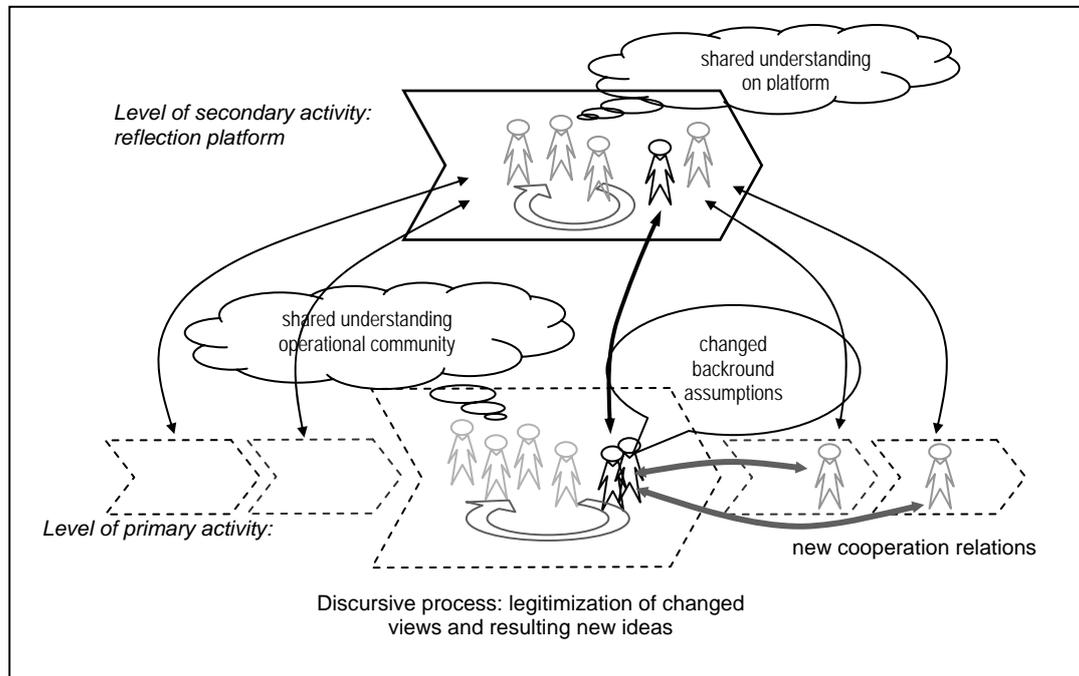


Figure 3: A platform model of learning and development (Schulz & Geithner 2010b: 147)

A learning platform is a structural model where representatives of work processes meet for exchange, learning and development (Ciborra 1996). Number and origin of the platforms participants depends on the content to be discussed and developed, however participants on one hand should not be too close to each other and on the other hand most of the participants should share an object of consideration in daily work (Engeström & Blackler 2005). This learning and development model takes into account two levels: the secondary activity 'reflection platform' and the primary activity 'operational practice'. Participants meet on the platform - a space and time slot for collective acting, discussing and reflecting apart from their daily work - on a regular basis. Issues to be discussed derive from the operational practice of the participants. The learning platform can on the one hand be considered as an activity system on its own developed by its participants through collective acting and reflecting. On the other hand activity systems as well as the interaction between activity systems can be visualized through collective discussing and reflecting on platform level. Through the collective exchange on the platform it is likely that contradictions of daily work are brought into light. Furthermore new contradictions are likely to emerge through the different views of the platform participants. Such contradictions can be in or between the elements of an activity system or between two or more interacting activity systems. The concept of activity system provides dimension and categories in describing contradictions in a concrete way. Once the platform participants are back at their workplace (primary activity), questions arise in terms of what relevance the platform cooperation has for operational activities. Therefore outcomes from the platform level have to be discussed within the colleagues

at the workplace. Ideally the ideas are transferred to the specific operational situation and realized at the specific workplaces.

The design of the platform can be according to the company's requirements. It can be a discursive process similar to CIP. Other methods applied can be creativity techniques, business games or even an alternation between instruction and testing. Topics to be introduced should however always mirror a complex sequence of the operational work process and not be reduced to abstract learning issues, such as 'leadership', 'key figures' or 'communication'. The platform model is not an issue of knowledge transfer but of a dialectic relation between primary activity on operational practice and secondary activity on platform practice. This relation is essential for individual and collective development.

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 is not necessarily related to expansive development. It can include mere exchange and search for solutions over problem solving methods (Schulz & Geithner 2010a). Finally ideas of change for the whole system can be developed (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 work practice. While acting, practitioners are put in a position to re-create their practice (see also Lave & Wenger 1991) – in other words: the re-creation of practice may lead to organizational development and individuals learn through re-creating their practice on operational work level.

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