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Learning-Program Creation in Work Organizations

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The article deals with the creation of employee learning programs in relation to the work they perform. The aim of the study was to gather empirical evidence for an actor model as an analytical framework for learning-program creation in work contexts. This process is understood as combining various types of learning situations into a coherent set of learning activities by a network of actors. After an outline of the actor model, the empirical basis for five of its core assumptions is investigated: (a) learning programs in different work contexts; (b) views and interests of actors; (c) social interactions among actors; (d) learning programs as combinations of learning situations; and (e) the typological approach. Based on this research overview, conclusions are drawn about the empirical basis of the actor model and about promising directions for further research.

Keywords: *learning programs; primary work processes; actor networks; typologies; social interaction; learning structures; work and learning*

The relationship between work and learning is an important topic in discussions and policies concerning employee development in work organizations. Tuning learning and work to one another—or even integrating the two—is a leading idea in concepts like workplace learning, informal learning, and personal development planning. Policy statements about lifelong learning express the notion that education and development continue throughout working life. Moving companies toward a learning organization often involves learning from work improvement. In addition, recent ideas about knowledge management show organizations attempting to recognize and utilize better the learning and knowledge gained by their employees.

The theoretical and empirical basis of these perspectives, however interesting in themselves, is rather limited as yet. The present study presents a theoretical framework for research into the relationships between employee

learning and work in organizations. Five core elements from this so-called actor model are then further investigated in terms of conclusions from empirical research that has been conducted into these topics. The aim of this article is to yield a number of promising directions for further research into the relationship between work and learning.

In the present study, the terms *work* and *learning* are used only in connection with employees engaged in the primary process of an organization. Every company has a primary process in which employees manufacture products or provide services (e.g., assembling cars in a factory, treating patients in a hospital, or giving clients a piece of advice in a consultancy firm). The primary work process can be distinguished into various core tasks, including preparation, execution, support, control, and improvement. These tasks can be divided among employees and attuned to each other in various ways (Mintzberg, 1989). Traditionally, tasks were broken down into many subtasks with limited authority and consultation. This gave rise to the bureaucratic, Tayloristic organization of the primary work process (e.g., the work of clerks in an insurance company). A popular alternative is the creation of autonomous teams, in which groups of employees are made responsible for a certain range of tasks and corresponding outputs. The teams can decide on the division, execution, and improvement of their work (e.g., in an information technology [IT] company designing and maintaining Web sites for large corporations). A third way to organize work is having individual employees responsible for their own jobs. They become self-directed entrepreneurs, whose activities are loosely coupled within the larger organization (e.g., in a partnership of mortgage advisers). A fourth alternative is evident in a professional organization, where highly educated professionals carry out the primary process. They conform to professional methods and codes strongly advocated by their professional associations (e.g., the work of medical doctors in a hospital). Needless to say, real-life work organizations usually exhibit characteristics of more than one of these types (Mintzberg, 1989). A particular type of primary work process is more often than not a hybrid form drawing on two or more of the presented ideal types.

The question in this study, then, was how learning is organized for employees conducting various primary work processes. Until recently, attention in this domain was focused on education and training for these people, as provided by trainers and educators. The range of possible learning activities has been broadened, however, by the discovery of informal, incidental, and workplace learning. Organizing learning has thus become a question of creating learning opportunities and combining various learning activities into more-or-less coherent programs. In the remainder of this article, we refer to this process as learning-program creation. Educators and trainers are involved in it as much as workers and managers are (among other learning actors). Learning in everyday work situations often emerges from

social events, for instance, talking to colleagues or supervisors, during team meetings, or through collective problem solving. This type of learning can be approached more systematically and explicitly when several actors form a temporary learning group to create a learning program around a certain work-relevant theme. Therefore, learning programs can be organized in various ways, more or less structured, more or less complex, more or less deliberate, more or less collective. All learning programs contain informal workplace learning activities, and most of them encompass some form of formal training activity. These are combined in various ways, however, into very different programs.

This study addressed the questions of how employee learning is organized and how these learning programs are related to the primary work process in the organization. Our interest in these questions is based on the assumption that work characteristics become more relevant to learning-program creation as work and learning get more closely aligned. In the last decade, many authors in the field of human resource development (HRD) have promoted this kind of alignment (e.g., Ellström, 2001; Torraco, 1999; Watkins & Marsick, 1993).

The article is structured as follows. First, the essential elements of an actor model are outlined in two steps. Second, five core issues from the model are discussed in terms of empirical research conducted. Third, conclusions are drawn about the application of the actor model, and topics are presented for further research into the relationship between work and learning.

A Two-Stage Model for Analyzing Relations Between Work and Learning

The learning-network theory (Van der Krogt, 1998) focuses on the relationships between the organization of work in the primary process and the creation of learning programs. The ideas of Poell (1998) around organizing work-related learning projects are also concerned with the various connections between work and learning. Both approaches are combined in this section to construct a model that offers insight into the relationship between work and learning and that forms a basis for further theory development and empirical research. The model is constructed in two stages. First, a structure model is developed to explore a direct relationship between work characteristics and the structure of learning programs in the primary work process. Second, this model is extended to include the notion that organizational actors create learning programs together within a small temporary network. The second, full model is referred to as an actor model.

A Structure Model

The structure model proposes a direct relationship between work in the primary process of an organization and the way in which employee learning is structured. Following Mintzberg (1989), Van der Krogt (1998) distinguished between four ideal types of work organization. It is assumed that the differences between the four types are based on the kind of work carried out in the primary process. Van der Krogt (1998) also distinguished between four different ways to structure employee learning programs—four ideal types of learning structure (as evident from different procedures, responsibilities, and facilities for learning). Similar categorizations of learning structure are often presented in literature (e.g., Ellström, 2001; Nonaka & Takeuchi, 1995; Swieringa & Wierdsma, 1994; Versloot, De Jong, & Thijssen, 2001).

Table 1 summarizes the expected relationships. The left-hand column contains four types of organization, the center column describes the matching types of work, and the right-hand column presents the corresponding types of learning structure (cf. Poell, Chivers, Van der Krogt, & Wildemeersch, 2000). A liberal learning structure is expected to occur in an entrepreneurial type of organization with highly individual work (cf., the mortgage advisers referred to earlier). Self-directed employee learning is the core characteristic of a liberal learning structure. A vertical learning structure is assumed to be in place for a machine-type organization with task work (cf. bank clerks). Employee learning in a vertical structure has been highly prestructured for them by management and HRD professionals. A horizontal learning structure corresponds with an organic organization of team-based work (cf. Web site developers). Here, employee learning is very much integrated with everyday work and group problem solving. Finally, an external learning structure is expected in professional organizations with professional work (cf. medical doctors). In the latter case, employee learning is structured outside the organization by the professional association to which they belong. As with the different work types, a learning structure in a real-life work organization normally comprises more than one ideal type. Hybrids are to be expected here as well.

The structure model next proposes that the existing work and learning structure in an organization provide the context for learning programs to take place. For analytical purposes, four ideal types of learning program are distinguished here, which are expected to correspond with the work and learning structures described earlier. The following four learning-program types are summarized in Table 2 and described next (Poell, 1998; Poell & Van der Krogt, 2002):

The contractual, individual-oriented learning program. In this ideal type, individual learners are self-responsible for undertaking learning activities and

TABLE 1:   **Relations Between Work and Learning Structure in Different Types of Organizations**

Type of Organization	Type of Work in the Primary Process	Type of Learning Structure
Entrepreneurial organization	Individual work	Liberal
Machine organization	Task work	Vertical
Organic organization	Group work	Horizontal
Professional organization	Professional work	External

keeping up with changes. They combine various learning situations provided by everyday work, by contacts with colleagues and clients, and by off-the-job education facilities. They make contractual arrangements with their supervisors about expected learning outputs and support. The content of the learning program is geared toward the development of individual expertise. This type focuses on self-directed employee learning (Brookfield, 1986) and individual responsibility for learning (Candy, 1991). It is epitomized in the term *free-agent learner* (Caudron, 1999).

The regulated, task-oriented learning program. In this ideal type, educators and experts consult with management to prepare, execute, and evaluate learning activities for employees. A lot of careful planning and subsequent regulation is involved, based on policy intentions and job analyses. Here, employee learning is aimed at specific tasks or well-defined jobs. This type draws on the training-for-impact approach taken by Robinson and Robinson (1989) and on the ideas about structured on-the-job training of Jacobs and Jones (1995). A highly prestructured way of organizing formal off-the-job learning is combined with transfer-enhancing activities (Broad & Newstrom, 1992).

The organic, problem-oriented learning program. In this ideal type, a relatively autonomous team of learners guided by a process counselor solves complex work problems for which there are no standardized solutions. Supervisors can be involved as well, but strictly on an egalitarian basis. Learning is organic, mission driven, and based on collective reflection and progressive insight into a work-relevant problem. This type is derived from early work on organizational learning (Argyris & Schön, 1978), subsequent ideas around learning organizations (Senge, 1990), and more recent notions about communities of practice (Wenger, 1998).

The collegiate, method-oriented learning program. In this ideal type, professionals are inspired by new methods developed within their professional association. Together with colleagues from other professional organizations, they learn about innovative insights and new scientific methods. They adapt their work repertoire to incorporate the new techniques that come with those.

TABLE 2:   Main Characteristics of Four Learning-Program Types

Main Characteristics	Type of Learning Program			
	Contractual, Individually Oriented	*Regulated, Task Oriented*	*Organic, Problem Oriented*	*Innovative, Methodically Oriented*
Dominant actor, core activities	Individual learner, combines learning situations	Educators and experts, design learning activities for learners	Relatively autonomous team, reflects on collective problem solving	Professionals, translate new insights from professional association into work repertoire
Organization of learning program	Contractual relations	Regulated relations	Organic relations	Collegial relations
Content of learning program	Development of individual expertise	Task- or function-oriented learning activities	Problem or organization-oriented work-based learning activities	Profession-oriented learning activities around working methods

This type views professionals as reflective learners (Schön, 1983) who develop their expertise within a professional peer group on an ongoing basis (Daley, 1999).

Actual learning programs in real-life work organizations usually combine features from more than one of these ideal types. For example, Poell (1998) studied 16 learning-project cases to arrive at three empirical types describing his sample: a vertical-liberal hybrid, a vertical-horizontal one, and an external-horizontal type. Overlap between and among the types is certainly to be expected in organizational reality.

This completes the first stage of our model in which strong connections are predicted between work and learning, based on the idea that each type of work will offer specific opportunities for employee learning. Mortgage advisers will get other work situations to learn from than bank clerks will get. In addition, the content of the learning programs will differ according to the type of work involved. Medical doctors will learn different things than Web site developers will learn. A final argument for the expected relationship lies in the similarities between the organization of work in the primary process and the learning structure that has come to be in place during the years. In other words, work and learning are based on similar organizing principles.

An Actor Model

Actors in a network take central stage in the actor model. Actors are individuals or collectives of people who act based on their own views and interests. Core actors for work and learning are employees, supervisors, managers, trainers, and HRD professionals. Other relevant stakeholders are work preparation staff, professional associations, workers' councils, and trade unions. An employee learning program takes place because a constellation of various actors (a learning group) creates it in interaction with one another. This process of learning-program creation occurs in the context of the existing work and learning structure. The context influences the actions taken by the actors, but they do not necessarily act completely in line with the existing structures. Their actions are influenced as well by the individual and collective views and interests of the actors. The relationships between the core elements of the actor model are presented in Figure 1.

The fact that the model contains no arrow from Learning-Program Creation back to Context should not be taken to mean that these two are thus unrelated. It only indicates that this particular relationship is not at the core of our current argument, which deals with the way learning programs are created. Similar to other theories of learning that apply to work settings (e.g., action learning, situated cognition, experiential learning, reflection in action, distributed cognition), our model allows for interaction among the concepts of learning, practice, and context. It is therefore entirely possible
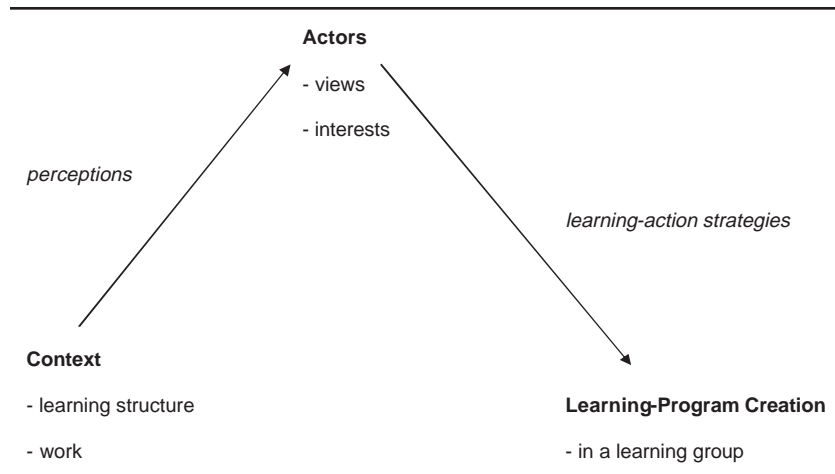
Actors

- views

- interests

perceptions

learning-action strategies

Context

- learning structure

- work

Learning-Program Creation

- in a learning group

FIGURE 1: Actor Model for Analyzing Relations Between Work and Learning

that the learning generated by a learning group might influence the context of learning and work. As a matter of fact, earlier incarnations of the learning-network theory (Poell, 1998; Van der Krogt, 1998) stipulated such impact and drew the arrow back accordingly. One may even argue that continuation of work-related learning beyond a one-off program, through an impact on existing structures, is essential to human resource development. Poell and Van der Krogt (2002) described a number of ways in which such continuation can be achieved, some of them more in the realm of the HRD professional, others in the hands of mainly employees and managers.

Actors, their views, and their interests are relevant to learning-program creation in three ways. First, actors perceive and interpret their context. Although work and learning structures influence their actions, actors act mainly based on their perceptions and interpretations (Hosking, Dachler, Gergen, & Westwood, 1998). They develop individual and collective images about requirements, work problems, and learning opportunities on offer. These perceptions direct their actions in learning-program creation. They interpret the procedures, tasks, and responsibilities connected to this process. Actors also bring their own focus to the learning theme and problems being worked on. Second, actors act according to their own views and interests in the process of learning-program creation (Wilson & Cervero, 1997). Learning employees are core actors, in that their actions are crucial besides those of educators, trainers, supervisors, managers, and colleagues. Personal views about the organization and content of learning programs are important in this connection. Actors often have their own—implicit or explicit—ideas about what and how they should learn. Third, actors form a learning group aimed at creating a specific learning program. The learning

program is based on the strategies of separate actors, but their interactions within the learning group will bring about a specific collective focus as well (Homan, 2001; Kasl, Marsick, & Dechant, 1997). Actors interact with each other and learn from one another, for example, about how a learning program works and which approach is most effective. They constantly respond to each other's actions, causing the learning group to develop its specific dynamics. Thus, each learning group creates a learning program with a character of its own.

Similar to the structure model, the actor model proposes relationships, however much weaker, between work and learning programs. This is because actors' views influence the interpretation of context as well as their learning action strategies. Actors can deliberately create a learning program that deviates from the normal organizational routine. Such deviations are indicative of the specific nature of a learning program. Actual learning programs as created by actors will, therefore, differ considerably from the four possible ideal types described previously. The ideal types can only be approached if all actors conform totally to the existing context. Different from the structure model, the actor model would deem this unlikely.

An Integrated Model

In this section, a two-stage model for studying the relationships between work and learning is presented. The structure model emphasizes that work and learning are essentially based on similar structuring principles, so that direct relationships are to be expected. The actor model adds the notion of individual and collective actor interpretations and strategies, thereby complicating the relationships between work and learning. The first model focuses on structures and systems; the second brings the actions of actors in networks into play. The actor model encompasses the structure model and adds important new elements to it as well.

To understand the dynamics of organizing learning programs, both models should be viewed as an integrated whole. The structure part of the model capitalizes on the fact that the same people who organize work oftentimes also organize the learning that goes with it (viz., employees, supervisors, and managers), thereby constantly reproducing the underlying, similar organizing principles into fixed structures. The actor part of the model, however, takes into account the fact that power relations concerning learning differ from those around the organization of work. Employees are more powerful than HRD professionals or managers when it comes to learning (e.g., they cannot be forced to learn), whereas management has more power in organizing work. Because actors deploy different strategies in both realms (based on different perceptions, theories, and interests), discrepancies between the organization of work and the organization of learning can be

expected. One could say that, in principle, actors always have the choice to deviate from the learning-program type that is expected on the basis of the existing work and learning structure. To what extent they do depends largely on the strategies of the most powerful actor contributing to the organization of the learning program, as well as on the possibilities for the remaining actors to still exert their influence. In any case, to analyze how exactly learning programs come into being in their organizational context, the structure and the actor parts of the model provide necessary input.

The next section describes—mainly empirical—research into five core elements of the actor model to investigate its relevance.

Research Into Work and Learning Programs: Five Topics

Five core elements can be distinguished within the actor model, namely:

- learning programs in different work contexts
- views and interests of actors
- social interactions between actors
- learning programs as combinations of various learning activities
- the typological approach

In this section it is intended to bring together what is known from—mainly empirical—research into these five topics.

Learning Programs in Different Work Contexts

A core assumption of the actor model is that learning programs are organized differently depending on the work context. Comparative studies from two research traditions shed light on this issue. The first research tradition originates from a critique of the bureaucratic, Tayloristic organization. Other ways to organize work are sought, based on sociotechnical design and semiautonomous work teams. An important consideration is the limited learning potential of Tayloristic organizations. Relatively autonomous teamwork is thought to offer considerably more learning opportunities. The—rather infrequent—empirical studies that compare learning in Tayloristic organizations to learning in team-based work show that learning processes differ between both work contexts (Agnew, Forrester, Hassard, & Procter, 1997; Davidson & Svedin, 1999).

The second research tradition is connected with the rise of knowledge work and knowledge-intensive organizations. The discussion here focuses on learning by well-educated workers, usually referred to as professionals. The core question is how to encourage these professionals to learn and make better use of their knowledge in organizational processes (e.g., Brugman, 1999; Kwakman, 1998; Van Aken & Weggeman, 2000). This problem

hardly occurs in organizations where low-skilled workers perform simple jobs. Even though both research traditions remain almost completely separated, it is still possible to conclude from these studies that learning programs differ from one work context to the other.

There are few studies that compare learning in different work contexts directly. Poell (1998) and Van der Krogt and Warmerdam (1997) found different learning practices to be related to different work contexts. Daley (2001) found learning processes to differ across four types of occupations. Many studies do focus on training and learning of a particular occupational group, for instance, manufacturing workers (Van den Tillaart, Van den Berg, & Warmerdam, 1998a; 1998b), research and development professionals (Brugman, 1999; Liebeskind, Oliver, Zucker, & Brewer, 1996), HRD practitioners (Filius, De Jong, & Roelofs, 2000), and teachers (Bolhuis & Voeten, 2001; Kwakman, 1998). Comparing these single studies, it can be derived that various groups of employees learn in different work situations and participate in different learning activities.

Views and Interests of Actors

The main difference between the structure model and the actor model lies in the emphasis on actor perceptions and strategies in the latter. Actor positions and their interactions have an impact on the activities that make up learning programs (Smith & Hayton, 1999). Actor views and interests direct their learning strategies within the boundaries set by the existing context (Di Bella, Nevis, & Gould, 1996).

Views of educators have been studied relatively frequently (McLagan, 1989; Nijhof, 2002), as well as learning views of employees (Bolhuis & Voeten, 2001). These studies do not, however, relate specifically to work and learning programs. An important finding from empirical research in this area is that actor characteristics—especially their context perceptions—explain differences in learning-program effectiveness (Kwakman, 1998; Straka, 1999). For example, Wognum and Lam (2001) concluded, in an empirical study of 44 learning programs, that people's judgment about organizational alignment of an HRD intervention affected learning-program effectiveness more profoundly than the actual alignment. Perceived alignment and perceived effectiveness were related, but actual alignment had little impact on effectiveness judgments.

Van der Klink and Streumer (2002) studied the effectiveness of workplace training empirically. They found that training effectiveness is influenced much more by trainee characteristics than by the training itself. Trainee aptitude, experience, and motivation had the biggest impact on training effectiveness. Organizational characteristics, such as the behavior of managers and colleagues, were less influential. The characteristics of the

training itself were found to have the least impact on effectiveness. Kwakman (1998) drew similar conclusions.

In his empirical study of curriculum design strategies, Kessels (1993) paid a lot of attention to involving the various participants in the design and implementation of learning programs. He emphasized the importance of realizing external curriculum consistency for learning programs to be effective. In other words, a learning program turned out to be more effective if managers, program designers, trainers, and trainees shared common opinions about its goals, strategies, and implementation.

Social Interactions Among Actors

In the actor model, learning-program creation is viewed as a social process. The nature of social interactions among actors, however, is not a given. Analysis should, therefore, not be limited to organic work teams and integrated learning arrangements, as promoted in literature about communities of practice (Wenger, 1998). There is little research into competitive, unequal, or hierarchical learning relationships, and scant attention to the diversity of actor interests in learning-program creation (Rainbird, 2000). Still, such programs are also created in hierarchical or loosely coupled learning groups. The actor model assumes that all types of social relationships produce their own specific learning programs.

Groups and work teams have always been considered as contexts for employee development in literature on organizational development (French & Bell, 1999). During the last decade this topic has also become an object of concern in literature on the learning organization. Work is increasingly expected to be organized in teams. Groups and teams are widely considered to be strong learning environments (Ellström, 2001; Onstenk & Voncken, 1996; Watkins & Marsick, 1993; Wenger & Snyder, 2000). Production teams involved in the primary work process of an organization, however, have not been well researched empirically (Hendry, 1996). Research often focuses on management teams (e.g., Burgoyne & Reynolds, 1997), interdisciplinary teams (e.g., Cooley, 1994), and temporary project groups or task forces.

Empirical research shows that team-based work as an organizational form is not as prevalent in practice as predicted (Benders, 1999; Dankbaar, 1997; Poutsma, Hendrickx, & Huijgen, 2001; Sey, 2000). Moreover, empirical research provides little evidence for the high expectations concerning the performance, opportunities for participation, member satisfaction and motivation, and learning potential of groups and teams (Boot & Reynolds, 1997; Russ-Eft, Preskill, & Sleezer, 1997; Willis & Boverie, 1998; Poutsma et al., 2001).

Learning Programs as Combinations of Various Learning Activities

A major reason to use the concept of a learning program is that learning is a continuous process taking place across various situations. Education, training, and other explicitly formalized situations constitute only part of the program created by employees as they learn about a certain theme or problem (Clardy, 2000; Tough, 1978). Most empirical research, however, deals with training situations rather than workplace, informal, and incidental learning activities of employees. Little attention is paid to combining and attuning various work situations into a learning program, for example, combining self-study with workplace instruction, attuning structured on-the-job training to experiential learning (Eraut, Alderton, Cole, & Senker, 1998).

Learning programs can be analyzed as combinations of learning situations by using ideas on transfer of training (Broad & Newstrom, 1992). This concept applies when employees in their daily work routine do not deploy knowledge and skills gained through training. Measures to enhance transfer of training are sought in two directions. First, trainers can improve the effectiveness of their activities before, during, and after training (Robinson & Robinson, 1989). Second, analyzing and altering the work situation can be the starting point, as shown by Holton, Bates, and Ruona (2000), who developed an instrument to measure the transfer climate of an organization. Improving transfer conditions can also be viewed as a measure to promote learning at the workplace combined with learning in training situations.

The Typological Approach

Organization theory is very familiar with typologies (i.e., systems that describe coherent constellations of various characteristics or variables). One rather well-known typology is Argyris and Schön's (1996) distinction between mechanical (Type I) and organic (Type II) organizations, and the respective learning strategies they use. Nonaka and Takeuchi (1995) also related organizational types to various ways in which learning is organized. Organizational types can be used to clarify complex relationships between variables or characteristics (cf. Ortenblad, 2002). Literature on learning and organizing is familiar also with the use of typologies on the individual and group level. To describe patterns in beliefs, behaviors, or structures, authors have developed typologies of, for example, learning styles (Kolb, 1984), strategies (Mintzberg, Ahlstrand, & Lampel, 1998), and group structures (Poutsma et al., 2001).

The actor model assumes that various types of organization, work, learning structures, and learning programs can be distinguished and related to

each other. As argued earlier in this section, empirical research provides evidence for the existence of various learning structures and the creation of various learning programs in different organizations (e.g., Agnew et al., 1997; Davidson & Svedin, 1999; Daley, 2001).

Conclusions and Perspectives

In this final section, conclusions are drawn from the research overview presented earlier, and implications for the application of the actor model are discussed. Promising directions for future research are described briefly.

Conclusions From the Research Overview

First, research seems to support the notion of viewing learning programs as combinations of learning situations, that is, meaningful connections between different types of learning activities (formal, informal, and incidental; on and off the job). A one-sided focus on training activities with transfer-enhancing measures is thus avoided. In addition, using typologies (of organizations, groups, and individual characteristics) appears to be a rather common approach in research on work and learning.

Second, many studies show relationships between learning programs and work. Employee learning programs in different organizations and occupations differ significantly, although the exact nature of the relations is difficult to interpret. The research overview seems to suggest rather ambiguous relationships between work and learning. Work does have an impact on learning programs in organizations, but other factors seem to complicate the relationship.

Third, there is clear evidence from research to suggest that these other factors include the impact that actors exert on work and learning. Possible explanations for the "fuzzy" relationship between learning programs and work can be found in actor interpretations of the context, actor views and interests, and subsequent organizing strategies of the actors. Actors always have different options to organize work and learning programs in certain ways and to connect the two.

Fourth, the research overview shows that social interactions among actors can take various shapes, although literature tends to place more value on organic, integrated learning and work arrangements. Organizational reality, however, turns out to be much broader and more complex than this tendency suggests. Moreover, the empirical basis for the high expectations of teamwork and group learning appears to be weak, and such arrangements turn out to be much less common in practice than is often claimed.

Conclusions Regarding the Actor Model

From the research overview, it is apparent that many studies pay more attention to structural components of work and learning programs than to the actors organizing learning and work activities. For example, many studies deal with educator roles and transfer-enhancing measures in training design, whereas cultural aspects (e.g., learning climate and actor interpretations) and the content of learning programs remain relatively under-addressed issues.

Various elements of the actor model are dealt with in literature; however, their mutual interconnections are scarcely explored. Especially the relations between actor characteristics and other parts of the model receive little attention. Organizing is often viewed in a limited sense, as designing structures and procedures, whereas few studies explicitly address the way in which actors shape learning processes and organizational changes, cultural aspects, and collective actor views. If studies pay attention to the relationship between work and learning, this is usually from a structure model. The actor model as such has enjoyed limited application so far. The notion of actors in a network creating learning programs within the context of existing work and learning structures is as yet less prevalent than the idea of structuring learning programs in accordance with existing work structures. Nevertheless, some authors have applied the actor model for their research (Harris, Simons, & Bone, 2000; Mick, 2001; Pluijmen, 2001; Sterck & Baert, 2002).

Viewed the other way around, the actor model does relate many familiar elements from theory and research into work and learning to each other. The model can be viewed as an attempt to integrate these elements into a coherent framework. An important feature of the model is the idea that actors can form a learning group to create a subsequent learning program. They do so based on their interpretations of the context, that is, the existing work and learning structure. The model thus builds on promising new situated approaches to learning (Gherardi, Nicolini, & Odella, 1998) and relational approaches to organization (Hosking et al., 1998).

Relationships between work and learning turn out to be rather complex. On the one hand, relationships can certainly be expected, because learning groups and programs are created in the context of work, which provides many specific learning opportunities. On the other hand, learning programs are also created by a highly specific learning group, developing very much its own dynamics as it proceeds. Such complex relationships can be reduced to the basic notion of multiple learning programs, meaning that learning programs always show influences from a diversity of factors. Work characteristics may have considerable impact on learning programs; it is still individual actors and specific learning groups that put an emphasis on them. They interpret work in the primary process of the organization as well as the

learning opportunities it offers, in their own singular way. On this basis, they each employ their own organizing strategy to create a joint learning program as a small temporary network.

The actor model does not offer strict predictions ("Individual work will always produce liberal learning programs"), nor does it aim to provide a normative stance ("Organic learning programs are the most effective ones"). The value of the model lies in the opportunities it offers to describe and explain the ways in which actors create learning programs in connection with work. Besides researchers who are interested in this issue, the model can be used by organizational actors (training professionals as well as employees and managers) as they create learning programs. For example, it enables them to clarify more explicitly than is normally the case, how learning-program creation is dealt with in their organization and how it should or could be improved. Further (action) research is needed to shed light on the practical usability of the model.

Perspectives for Further Research

Many topics for further research can be derived from the actor model. Two main themes seem especially relevant with a view to clarifying the specific relationships between work and learning as well as the strategies employed by actors:

- perceptions, views, interests, and strategies of actors in learning-program creation
- learning programs in different learning structure and work contexts.

These themes are briefly elaborated on next.

Actor perceptions, views, interests, and strategies. A first crucial question is what exactly it is that actors do during the process of learning-program creation. How systematically do they approach the organization of learning activities? Are their actions characterized by enough of a pattern to refer to them as learning-action strategies? Learning activities organized by employees and managers can be expected to display little coherence or system, whereas there seems to be a greater likelihood of systematic learning-program creation activities as carried out by trainers and educators.

Actors form a learning group as they create learning programs. An important question is the extent to which views and strategies of actors in the same learning group are similar. How do actors interpret and deal with differences among the group members? Do they attempt to point out and discuss such diversity? How do differences and similarities among actors (especially in their perceptions and strategies) influence the process and outcomes of learning-program creation?

Another question refers to the changes in actor strategies over time. Do actors adjust their strategies to those of other actors in the learning group

as they move along? Are there any process evaluations during learning-program creation, do these have an impact on differences and similarities among actors, and do actors adjust their perceptions and strategies?

Learning programs in different contexts. Learning programs can reflect the existing context as well as bring new elements into it. In other words, learning programs can display similarities and discrepancies with the context in which actors create them. The general question here is how exactly learning programs are related to the existing work and learning structures in various types of organization. In this respect, comparative studies of learning groups and learning programs are needed in various occupations and organizational types. It seems fruitful also to look at the way in which learning programs are used in support of organizational changes.

To gain knowledge about the relationship between learning programs and the existing learning structure in organizations, more research needs to be conducted into the organizational learning climate and the learning potential of work. For example, is a centrally directed learning group always related to a control-oriented learning climate? And does work with a high learning potential necessarily produce horizontal learning groups, or do various types of learning groups occur even in this one work type?

The actor model provides a framework to study these questions for further research and to shed a light on the many still unresolved issues in the area of learning as related to work.

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