The learning network theory: its contribution to our understanding of work based learning projects and learning climate.

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1. Introduction

Over the last decade, adult education in the context of work organizations has gained increasing attention in educational research (Hake, 1994). This reflects a growing concern for innovation, organization development, and training within various organizations and fields of practice, accounting for huge expenditures of time and money (Carnevale, Gainer, & Villet, 1990). Corporate education as a tool of management has become a dominant theme in research and practice. It is assumed that management can use education, employee development, and training as steering mechanisms. Corporate education has focused on providing employees with courses and training programs to enable them to perform their jobs adequately and adapt to changes. This paradigm may be criticized for a number of reasons:

1. It neglects work based learning activities. Education and training are instruments to organize learning formally. Other ways in which learning is organized are ignored, for example working one's way into a job, experimenting with alternative work methods, consulting expert colleagues on work problems, and so forth. These and other forms of informal and incidental learning in work are vital in order to understand work related learning processes (e.g., transfer of training content to the job).

2. It fails to take into account that some kinds of work are difficult to analyse in such a way that an effective training course can be designed. This may be due to rapidly changing work demands (e.g., information technology), unclear work demands (e.g., research, consultancy) or disputed work demands (e.g., care). When this is the case, learning what work should be done and how it is best performed is an integrated part of work itself. This sort of learning cannot be captured in training courses.

3. It ignores employees' initiatives, ideas and interests in work and learning. Employees tend to have their own reasons and motives to participate in learning activities. Their ideas are not necessarily in agreement with the interests of management. This discongruency accounts for the dynamics of organization development, reorganization, innovation, education, and learning efforts. Viewing education and training as tools of management seems inappropriate: they may also be used by employees as tools of personal and professional development.

The above criticism may help to explain why education and training often fail as tools of management, which is obvious from common complaints that "transfer of training to the job never took place", or "people offered resistance to change". Education and training
are often ineffective because the arrangements fit neither with employee characteristics nor with the type of work they perform. Adult education in work organizations should, therefore, be conceptualized as learning.

Several authors have discussed work related learning. Van der Krogt (1995) conceptualizes adult education in work organizations in terms of learning networks. Learning networks are created by different actors involved in organizing learning processes. Relevant actors are employees, managers, education and training staff, and external bodies (e.g., trade unions, professional associations, governments, commercial training agencies). These actors participate in the learning network according to their own action theory (Argyris & Schön, 1978) and their own interests.

In this paper we discuss two concepts related to Van der Krogt's learning network theory, namely learning projects and learning climate. These concepts may contribute to our understanding of work based learning.

2. Learning projects

Van der Krogt and Warmerdam (1993) present group learning projects as an appropriate instrument to organize employees' work related learning in groups. A learning project consists of a group of employees engaged in learning activities around a work relevant learning theme, with managers as relevant actors and, optionally, with educational professionals as counsellors (Poell, 1994). Learning projects allow groups to optimize work processes and learn from the experience at the same time. Marsick and Watkins (1990) elaborate on informal and incidental ways of learning and introduce the concept of action-reflection learning as a way to organize experiential learning in work. What all these authors have in common is their accounting for nonformal learning activities, for employee interests and initiatives, and for the complex relationship between work and learning.

Although it is well known that a great deal of work related learning occurs informally, socially, and on the job (Carnevale et al., 1990; Kwakman, 1995), there is a lack of empirical research that conceptualizes these forms of work related learning. It is still unclear how this learning is organized and how the learning processes involved are related to the organization of work processes. The concept of learning projects may be fruitful in illuminating the answers to these questions, because it allows for nonformal learning activities, for employee interests and initiatives, and for interrelating work and learning processes.

This paragraph is an exploration of the concept of learning projects as an instrument to organize employees' work related learning in groups. For this purpose, learning projects are conceptualized as small group learning and labour networks (Van der Krogt, 1995). On the organizational level, the learning network and the labour network are created by strategic actors engaged in policy-making, program development, and execution of work and learning programs. These processes result in structural arrangements regarding the
content, the organization and the climate in the networks, which in turn impact actor strategies. The learning and labour networks are schematized in Figure 1. Figure 1. The learning network and the labour network of an organization (from Van der Krogt, 1995).

Accordingly, on the learning project group level, learners and other strategic actors organize learning processes and change work processes around a central theme or problem. A learning project thus links work development and employee development to one another closely. Structural learning and work arrangements regarding the learning project's content, organization, and climate result from these processes. In this way, actors' action theories as well as the learning and labour network of the organization may change.
Four ideal types of learning projects may be derived from learning network theory: horizontal, external, vertical, and liberal learning projects. In Figure 2 these four ideal types of learning projects are schematized in a three-dimensional model. An empirical learning project may have characteristics of one or more ideal types:

1. In horizontal learning projects the learning group itself is a dominant actor. They try to solve a complex work relevant problem by an ongoing process of reflection on experiences, developing joint action theories, and putting these into practice in an investigative manner. Learning policy-making, learning program development and qualification are integrated processes. This approach is similar to the action-reflection learning described by Marsick and Watkins (1990), and to the adhocratic work group described by Mintzberg (1979).
2. In external learning projects the professional domain is a dominant actor. The learning group is inspired by action theories developed outside the organization (e.g., new work methods developed by professional associations). The members of the learning group adapt their work to the newly acquired action theories engaging in the development of learning activities, for example on the job practice and intervision. Members of the learning group may be part of the professional domain in order to participate in the development of new work methods.

3. In vertical learning projects staff members and line managers are dominant actors. Management decides on new work policies, work preparation staff translates these into work programs, and education staff designs a learning program in which the learning group takes part. Members of the learning group may participate in policy-making and program development, by providing information on their ideas about work, their learning needs, and their learning styles. This is similar to the training for impact approach described by Robinson and Robinson (1989).

4. In liberal learning projects skilled individuals are dominant actors. They team up to enrich their individual work improvement and learning programs with group reflection on their experiences. Each individual member is responsible for his own work and learning but there is a common theme or problem on the basis of which they undertake joint learning activities. The group share ideas and experiences but each individual member decides on their practical application.

Conceptualizing empirical learning projects in work organizations as small group learning and labour networks, allows several research questions to be asked. The main research questions are to determine the content and organization of each learning project, what participants have learned from it, and how it has affected their work. From learning network theory it can be hypothesized that learning projects will differ with regard to actors' action theories, processes, and structures. Second, it can be hypothesized that different learning projects will change actors' action theories as well as the learning and labour network of the organization.

Empirical data from a multiple case study involving four learning groups indeed suggest that work based learning can be organized in different types of group learning projects (Poell & Van der Krogt, in press). Learning projects were found to vary with respect to actors' action theories, learning and work processes, and structural arrangements. Two types of learning projects were discernable: a liberal-vertical type and an external-horizontal one. Learning projects appeared to contribute to changes in actors' action theories as well as changes in the labour and learning network of the organizations involved: in all four cases labour and learning networks as well as actors' action theories were reported to incorporate more professional/external and/or group/horizontal elements than was the case preceding the learning projects.

3. Learning climate
Whenever you compare people working on an assembly line with people working for instance as a scientist, you almost automatically feel that there is not only a difference in the structure of work but that there is also a difference in the way those different people learn. This difference in learning is probably closely related to the context in which they perform their work. This context which is of important relevance to peoples' learning can be regarded as the learning climate. While it is still unclear how a learning climate should be conceptualized, the following paragraphs will address this question.

In order to define the concept of learning climate, five approaches to the concept of organisational climate are distinguished:
- the cultural approach
- the structural approach
- the social ecologic approach
- the social constructivistic approach
- and the learning network approach.

These five approaches are distinguished on the basis of a review on organisational climate (Moran & Volkwein, 1992) and the learning network theory of Van der Krogt (1995). In the next paragraphs each approach is discussed in the light of its' contribution to the conceptualisation of learning climate. This will result in a learning climate definition.

3.1 The cultural approach

Both in the literature and in daily language the concept of climate is closely related to the concept of culture. This suggests that there is a connection between the climate and the culture of an organisation. Schein (1985) describes organisational culture as "the deeper level of basic assumptions and beliefs that are shared by members of an organization, that operate unconsciously, and that are defined in a basic 'taken for granted' fashion". This means that the culture of an organisation refers to the norms and values that are commonly shared by organisational members. The relationship between the culture and the climate of an organisation is addressed in the cultural approach by distinguishing different levels in the culture of an organisation (Hofstede, 1981; Frissen, 1988; Schneider, 1990). The deeper levels refer to the norms and values which represent the organisational culture. The more visible levels refer to the artefacts: the manifestation of the norms and values in daily practices in the organisation. Whereas there is great diversity in the amount of levels in the literature, according to Muijen (1994) it is sufficient to distinguish a lower and an upper level to conceptualize the difference between the culture and the climate of an organisation: the upper level then refers to the climate.

In our point of view the cultural approach offers some interesting points of departure in the conceptualization of learning climate. The cultural approach namely shows the importance of norms and values regarding learning in the learning activities employees undertake. Another characteristic of the cultural approach is the accent on daily shared
practices. In our view, these shared practices are an important characteristic of the climate in an organisation.

Whereas the cultural approach contributes to a clear distinction between the culture and the climate of an organisation, a critical comment should be mentioned as well. An important assumption of the cultural approach namely is that the climate of an organisation arises from shared norms and values. This gives rise to the assumption that a learning climate results from shared norms and values regarding learning in an organisation. The question that arises however is if employees' norms and values regarding learning are always in accordance with those of their managers. A manager, for instance, will have other interests in the learning of employees, than the employees themselves. Due to these differences in interests, we think it is more realistic to distinguish different (sub) learning cultures within organisations.

A question that arises from the last remark is: What implications does the distinction between (sub) learning cultures have to the concept of learning climate? In our view, a point worth mentioning is that probably there is no one to one relationship between the (sub) learning culture and the learning climate. In other words: the existence of several (sub) learning cultures does not necessarily mean that there are as much learning climates in an organisation. To give an example: In a particular organisation it can be the case that some practices around learning are commonly shared. This does not mean however that all employees in the organisation subscribe the practices. It can, for instance, be possible that some employees submitted to power relations, act according to these shared practices without agreeing on them.

3.2 The structural approach
Whereas the concept of climate in most cases is looked upon as being closely related to the concept of culture, the climate concept can also be approached from a structural point of view. From this viewpoint, the climate of an organisation refers to structural characteristics of an organisation. Forehand and Gilmer (1964), for instance, focus on the organisation's size, the degree of decision-making centralization and the number of levels in the hierarchy. The climate of an organisation is therefore almost similar to the structure of an organisation. A critical comment towards the structural approach is related to the way in which this approach mainly focuses on the formal structure of an organisation. Especially when you look upon climate as a context which is created by people, the structural approach seems very limited, because it ignores the informal structures within organisations. From this point of view, the Learning Climate Questionnaire (Bartram, Foster, Lindley, Brown & Nixon, 1993) can be criticized as well. In this questionnaire learning climate is looked upon as a structure which influences the learning behavior of employees. Employees are, for instance, asked to point out the amount of time and autonomy they have in their work. A critical comment towards this questionnaire is that employees' learning will probably also be influenced by the informal atmosphere they experience in their work.
This informal atmosphere can, for instance, influence the way in which employees make use of the autonomy in their work.

This critical comment towards the structural approach however does not mean however that the focus of this approach on structures is not relevant to the concept of learning climate at all. The amount of time and autonomy namely can also be regarded as a manifestation of the norms and values of the organisation with regard to the freedom employees should have to develop learning activities. Because of the fact that the structural approach does not mention however the relationship between norms and values and formal structures, this approach is considered not be very appropriate to define the concept of learning climate.

3.3 The social ecologic approach

The social ecologic approach also has a certain focus in defining the concept of climate. A first characteristic of the social ecologic approach is that it focuses on the interaction between an individual and the environment. From this point of view, climate refers to the way in which an individual experiences his or her environment. This means that the behavior of people is assumed to be influenced by peoples' affections regarding their (work) environment. Because of the accent on the individual, the social ecologic approach also uses the concept of psychological climate.

Whereas the individual experience of the learning environment can be considered to be important to learning behavior, it is our opinion that the concept of learning climate should not be defined at this level. First, we think that a specific characteristic of climate is that it refers to the context of people instead of the inner of an individual. Second, we think that defining climate on an individual level leads to the difficulty of conceptual differing between concepts like climate and work satisfaction (cf. Guion, 1973).

A second characteristic of the social ecologic approach is that within the environment of people, different contexts are distinguished. These context can be regarded as concentric circles. Bronfenbrenner (1979) distinguishes four levels: the micro system, the meso system, the exo system and the macro system. These levels are related to contexts which are closer to or further away from an individual. This distinction in levels is important to learning for two reasons. First, different learning conditions can be distinguished which are more or less closely related to an individual. In our view, this can be relevant to the concept of learning climate, because it is possible that within an organisation there are contexts in which a person does not participate but in which decisions are made which can be of importance to an individuals' learning. The second reason the distinction in levels can be relevant to the concept of learning climate is because people learn in different contexts. Employees can, for instance, learn on or off the job and with or without colleagues. In our view, an important characteristic that should be kept in mind, is that within all these different contexts, probably different norms and values regarding learning are dominant. This can, for instance, mean that a personnel department considers it important that budgets are created for learning of employees. Within a specific department however, managers at the
same time can consider it not to be important to use these budgets. This means that both norms and values regarding learning and power relations within organisations will influence the learning climate.

3.4 Social constructivistic approach
The social constructivistic approach focuses on the social interactions between people. In explaining the concept of climate, this approach focuses for this reason on the social interactions between employees. An important characteristic of climate in this approach is that it is related to certain habits that are created and maintained by employees of an organisation. Employees create, for instance, certain habits with respect to coffee breaks by organising them individually or in groups. In this way the social constructivistic focus on habits within an organisation is closely related to the idea of informal structures and commonly shared practices, which we consider to be important characteristics of climate.

According to the social constructivistic approach, a second characteristic of climate is that employees are not always aware of the implicit way in which their behaviour is directed by this climate. Employees, for instance, do not always explicitly think about the habits they have developed. For this reason, the naturalness of certain habits is another characteristic of climate. Employees usually only become aware of these practices, when they are pointed out by other people (mostly from outside the organisation).

The third characteristic of climate accentuated by the social constructivistic approach, is the relationship between the climate and the culture of an organisation. Similar to the cultural approach, the social constructivistic approach focuses on the way in which certain behavioural patterns are developed upon commonly shared norms and values.

3.5 The learning network approach
In contrast with the other four approaches, the learning network approach explicitly defines the concept of learning climate. In this approach learning climate is defined as the norms and values regarding learning that are enclosed within the structure of a learning network. As this definition shows, this approach of learning climate is very similar to the cultural approach. In the learning network approach it is, for instance, also assumed that certain norms and values within an organisation manifest themselves within structures. In contrast with the cultural approach, the learning network approach not only focuses on norms and values in general, but more specifically on norms and values regarding learning.

Another aspect mentioned in the learning network approach is the distinction in (sub) learning cultures within an organisation. In the learning network approach these (sub) learning cultures are related to groups of organisational members with different learning interests. Employees, for instance, will be interested in education to expand their own (internal or external) career possibilities. On the other hand, managers will want to educate their employees to increase their productivity. Furthermore, educators will also have certain interests in educating employees. They, for instance, are mostly interested in creating enough time and money to develop courses which are highly professional. According to the
learning network approach, there are many different groups with certain interests in learning. Not only employees, managers and educators have certain interests in the learning of employees, but also trade unions and professional associations can have certain interests. Because these groups have all different norms and values regarding learning, they can be considered to be (sub) learning cultures.

A new characteristic of climate that is added by the learning network approach is its dynamic character. In the learning network approach it is assumed that due to the fact that within an organisation there are different opinions regarding learning, a certain dynamic in the learning climate is created. This assumption is also further explored in the learnign network model (van der Krogt, 1995). In this model it is shown that there are constant interaction processes between different learning interest groups. These interaction processes result in a certain structure of the learning network and the learning climate. As a result of these interaction processes, the learning climate will constantly change. In our view, this dynamic is an important characteristic of climate, because the climate differs on this point from the culture of an organisation, which is assumed to be more static.

Another characteristic of learning climate that is highlighted by the learning network approach, is the importance of power relations. Under the influence of power relations, certain practices can namely be maintained, while at the same time there are different opinions about the usefulness of these practices. For example, an employee can on request of his manager be used to discuss problems with him, while at the same time he is convinced that it is more useful to discuss these problems with colleagues. In this way, certain habits are maintained under the influence of power relations, which can be experienced as ineffective.

In contrast with the other climate approaches, the learning network approach links the learning climate to the structure of work. Starting point of this link is the assumed relationship between the norms and values regarding labour processes and the norms and values regarding learning. To give and example: A person working on an assembly line will not be used to visit conferences in order to solve problems in his work. Whereas, it is very common for a doctor to learn in this way. As this example shows, the learning activities that are undertaken habitually, are very closely related to the type of work one performs. In our view, this is an important point of attention in doing research on learning climate.

Another aspect that is extensively discussed in the learning network approach is the relation between norms and values and learning behaviour. This relationship is explained with the help of the concept of (learning) action theories (Argyris & Schön, 1978). Based upon this concept, learning activities undertaken within an learning network are looked upon as being based upon the norms, insights and rules that are considered valid. This means that employees undertake learning activities on the basis of commonly shared learning action theories. In our view, it is important to notice however that in practice, employees will not always adjust their behaviour to these learning action theories. An employee can, for instance, also develop activities on the basis of his own individual learning action theory. To give an example: In a lot of organisations, it is very unusual to attend courses which are not
directly related to work, during working hours. An employee who has the opinion however
that a certain course is important to his career, can look for ways to attend this course
anyhow. As this example shows, we think it is important to focus on relatively shared
learning action theories, instead of overall shared learning action theories.

3.6 Learning climate definition
On the basis of the discussion of the five climate approaches learning climate can best be
defined as follows:
- The temporary manifestation of the dominant norms, insights and rules regarding learning
- of a group, department or organisation
- in shared practices in the field of learning
- which implicitly influences the learning activities employees undertake.

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