

Team Learning, Learning Networks and e-Learning in Organisations

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This article is concerned with the introduction of the idea of a team-based learning networks founded on team learning into the development of work and business organisations. This is a theoretical framework and a basis for forthcoming empirical research and development project. Network learning environments and eLearning are seen as central knowledge and learning resources for learning organisation. The model of hypertext organisation by Nonaka and Takeuchi, adhering to the principles of team learning, is presented as a solution to organising eLearning-based learning in work. Here the process of knowledge externalisation, implying that tacit knowledge of individuals is transformed into explicit, conceptual knowledge, is of paramount importance. More generally, team learning and learning networks require that the worker's intellectual capital and personal competence are seen as important resources in developing the quality of action and competitiveness of the organisation. Flexible, creative team learning and learning networks based on teams are not always easy to carry out. This indicates that key persons of particular organisations should be better informed of team work and of organising team learning. Basic knowledge of eLearning and conceptions of learning in new learning environments is also required at organisational level in order to be able to plan appropriate learning environments for the above mentioned learning situations.

TEAM LEARNING AND ELEARNING AS NEW WAYS OF SUPPORTING LEARNING AND CREATIVITY IN WORK

Current discussion about information society and especially about eLearning shows that as computer-mediated communication (CMC) evolves, a variety of elements previously belonging mainly to distance and online learning have been re-introduced as ways to implement education while using, for example, network learning environments. At the same time, business organisations have started to show interest in possibilities for team learning and learning in work. For the employer, the value of education and competence is particularly shown in better performance and better results (Ojala 1996). This has awoken interest in whether it would be possible to organise and promote learning and creativity in work by using eLearning technologies and effectively utilise and disseminate competence and knowledge generated in an organisation. This article refers to teams as a central unit of organising learning and creativity in work, whereas networks of teams indicate a social learning network which creates strategic prerequisites for intensifying action

and learning in an organisation or even between organisations. New networked eLearning technologies are associated with the idea of social learning network as a central learning resource and virtual space to team learning. Teams cannot alone serve as a precondition for organisational development, but also networks between teams are seen as having more extensive meaning.

Teams and network-based organisations have been discussed while examining in particular organisations in working life and team learning taking place in them. The use of and experiments with team work derive from the experiences in the industry from which they have expanded to new areas such as service industries and administration. The significance of teacher teams is also increasing in education, and strategies are developing. Teams as such may not represent anything new in organising work and learning, since the idea of teams dates back to as early as the 1960s and 1970s. Today the meaning of teams and especially networks consisting of teams has increased as a form of comprehensive development of work organisations' action. (Kärkkäinen 1998.) According to Katzenbach & Smith (1993) team can be defined as a small group of workers, who have complementary skills and have a common goal to reach for. These team members are committed themselves to work with each other to reach the shared aims and they have common responsibility as well. Katzenbach & Smith (1993) emphasize the importance of understanding the real nature and idea of team work. Ordinary working groups are very seldom becoming as real teams or top teams. Real team must take some risks to break the barriers of individual, practical or organisational obstacles. Kasl et. al (1997) define team learning as a process through which a group of learners create knowledge for its members, for itself as a system, and for other. It is typical of team learning that learners has an inherent and spontaneous motive for collaborate, that learners determine their learning goals, and learning contents are tailored mutually. Learning is co-operative and based on interaction, and it is evaluated on a self-evaluation basis. Learners thus have the possibility to study and apply issues closely related to their life situation and work flexibly and individually. (cf. Lehtinen 1997.) Work organisations need capable people who are ready and motivated to develop their competence and expertise according to the principles of team learning to meet the changes in the organisation and its operational environment.

The concept of eLearning has occasionally been used rather inconsistently. It may have been used to refer to individual learning material in network or computer-mediated communication in network context as well as to the distributed learning environment platforms in Internet. Pantzar (1995; 2001) indicates that a learning environment can be defined so that it covers both physical, mental and social dimensions in learning as well as learning and teaching material context and curricula. Aims and goals of learning in learning environments are outlined on both the learner's and organiser's terms. New eLearning possibilities in the information network are often brought up while talking about new learning environments. The integration of team-based learning and eLearning environment can thus be defined as a combination of social network of people and teams together with physical network of shared information and communication technology (ICT) based learning environment. Structured and formal learning is replaced with a eLearning

environment constructed by group of learners, in where they are able to set their learning goals and share their responsibility to follow the learning paths to meet these goals. Thus, team-based networked learning is a form of informal learning. Informal learning refers to learning outside the educational system, in work or everyday life. A community of practice is seen as an collaborative learning environment where shared knowledge construction occurs and where culturally derived norms are formed and learned. Social interaction is seen to be a paramount site for the development and practice of cognition. One might expect groups to perform better than individuals on various tasks, including learning, knowledge creation, creativity, and problem solving. (Korhonen 2001.) Methods of ICT have introduced new communicational potentials for this kind of collaborative team learning. Different network applications such as groupware systems, file transfer, discussion groups and databases can offer a better chance to organize knowledge and learning and provide an easier access to these resources.

Applying network strategy in working life and business is presently essential in order to develop the quality of action and competitiveness. Networked action is above all based on mutual trust and co-operation between firms, whereupon collaborators are able to concentrate on their core competence and acquire other services from their partners on a global basis. Apart from computer or industrial firms, new strategies, networks and information networks intensify action both within and between work organisations in many other branches, as well. Ojala (1996) suggests that especially traditional SMI industries in a variety of fields, whose clients have earlier been located in close proximity to the firms, could benefit from the potentials of networks in marketing. In producing goods and services, networks could more flexibly meet the fluctuations in demand. In networks, units specialised in a variety of fields are able to draw on their diversity, learn and create novel competence in the learning network they have joined.

LEARNING AS A STRATEGY FOR DEVELOPING WORK AND ORGANISATIONS

In order to make networked team learning possible, organisations need to contribute to creating prerequisites for competence development. An organisation applying team learning decentralises its decision-making and lets the employees assume more responsibility. Effective utilisation of team work is part of a network strategy and lowered organisational hierarchy. Teams and project groups operate across departmental and unit borders. It is also essential to lower the organisations, indicating that hierarchical layers are broken up and managerial tasks are increasingly transformed into the roles of instructor and consultant. Team leaders become key persons between employees and managers. Teams that can involve managers as well as the factory floor are based on horizontal dissemination of information in the organisation. An individual's commitment to the organisation, to developing work and him/herself is central to open organisational learning. The key question in the learning network is how to transfer information and knowledge

between teams. The knowledge base of a team-organised and network organisation is constructed in interaction with these expert communities. (see e.g. Järvinen 1997.) In an ideal situation, network teams operate and create competence in line with the goals and strategies of the whole organisation.

As for the entire organisation, work organisations may set their goals in a variety of ways and attach various staff development strategies to them. Drawing on the results of Juhela's (1993; cf. Tuomisto 1998) research findings, for instance, four educational strategies and orientation methods used by enterprises to develop their staff can be delineated:

preventive strategy (avoidance of costs); characteristic of the action is the staff's low level of education or at least an effort to avoid costs caused by it. This strategy fails to provide the employees organisational opportunities for independent development. Learning challenges or opportunities are not considered a method of development, nor does the organisation guarantee continuity of education for the staff. It is deemed that the staff's competence probably has no strategic meaning to the firm.

segmentary strategy (task differentiation and training for key persons); the action is based on organising work tasks by clearly distinguishable occupational groups and skill requirements. The principle is to single out those who will have access to education. Learning opportunities concentrate in key persons, who are provided with continuing education and the possibility to develop their work. The competence and education of the rest of the staff are neglected. This strategy maintains polarised structures of tasks and competence in work organisations.

strategy for supporting change; the action strives to attend to the development standpoint. The aim is, for example, to manage production reforms by developing production technology and processes. Staff training and development, though often non-recurrent in nature, are targeted at the whole staff. Neither a sustained outlook nor staff development programmes exist.

prospective strategy (sustained and anticipatory); the action is developed in an anticipatory and active manner and is targeted at the whole staff. Unlike the previous strategy this one strives for extensive and systematic staff development aiming at flexible professional skills and competence, which require persistence and continuity according to the principles of continuous education.

Learning in work should be open, fast and flexible as it makes the organisation more dynamic and able to better respond to rapid changes in its operative environment. This notion is closely related to the strategy for supporting change and the prospective strategy, mentioned above. In organisations whose action is based on team collaboration in the form of networks and on the utilisation of ICT, people endeavour to construct their own reality and knowledge independently, are conscious about it and able to reflect upon and actively adjust their strategies. Opportunities to accomplish this are also offered to them. So far, learning network is the ideal model of learning in work and not necessarily a prevailing practice. The ideas of team learning and eLearning environments as tools for training in work are also new. It requires a strong contribution to organising change and commitment to persistent staff development. Organisational knowledge and the way knowledge processes are managed are simultaneously developed to meet this aim. The prospective strategy is

probably quite rare in practice. As an aim the prospective strategy requires that learning is expanded to other areas as well instead of merely adopting tried and found strategies. For example, Tuomi (1999) points out that individual learning in successful organisations increasingly involves delineating future prospects. Failures can sometimes be of more significance than successes. In an organisational context, individual learning and development often relate to the experiences of positive atmosphere, encouragement and success. It would thus be essential to create organisational conditions which encourage experiments, creativity, learning, innovation and making ideas visible.

One of the key issues of organisational learning is associated with the management of the dynamics of a complex operational system both conceptually and practically. (see Sarala & Sarala 1996.) The above mentioned areas demonstrate issues in the action that emphasise the domains of the so-called tacit knowledge (Nonaka & Takeuchi 1995; 1998) and organisational culture. Making this wordless and tacit knowledge visible indicates the possibility to influence those processes that exist in organisations in principle but which have remained beyond influence. Only a small proportion of the existing organisational knowledge is visible symbolically and conceptually. The majority of the knowledge is invisible and wordless, concealed behind organisational strategies and the prevailing organisational culture. Poikela (1999) maintains that when the organisations' operational environment forces them into a state of continuous change, this leads to learning needs. Organisations need knowledge and competence creation for their learning needs. Team work in which competence and learning both in individuals and organisations can be conceptualised, is often referred to as a way to meet these needs. On the other hand, this is a situation where conceptualised knowledge should be readily available and in a form that further supports learning and quick information retrieval. In that sense information networks, methods of knowledge management rendered possible by ICT and eLearning could serve organisations as a knowledge and material storage for flexible and team learning needs.

The organisation of action basing on knowledge can serve both the productivity of teams and individual needs. Business organisations have lately shown interest in the phenomena of knowledge management and knowledge creation. Knowledge management can be characterised as improvement in organisational knowledge and knowledge process so that the quality of the actions of the entire organisation can be developed. Knowledge management refers to the whole of those experiences, observations, theories and practices, which relate to organisational and individual learning as well as to information exchange taking place in organisations. Knowledge management is thus not merely a question of mastering information technology, but of comprehensive understanding of human processes of action and of contexts of knowledge. It can be stated that each employee's learning is important for the success of the organisation. (Koski 1998, 112 – 113.) In other words, it is a whole made up of actions and organisational culture, in which employees, teams and team networks learn by constructing knowledge. Already, there are inter-organisational networks in the field of knowledge management exchanging its best methods. Efforts have also been made in the EU to develop policy programmes on

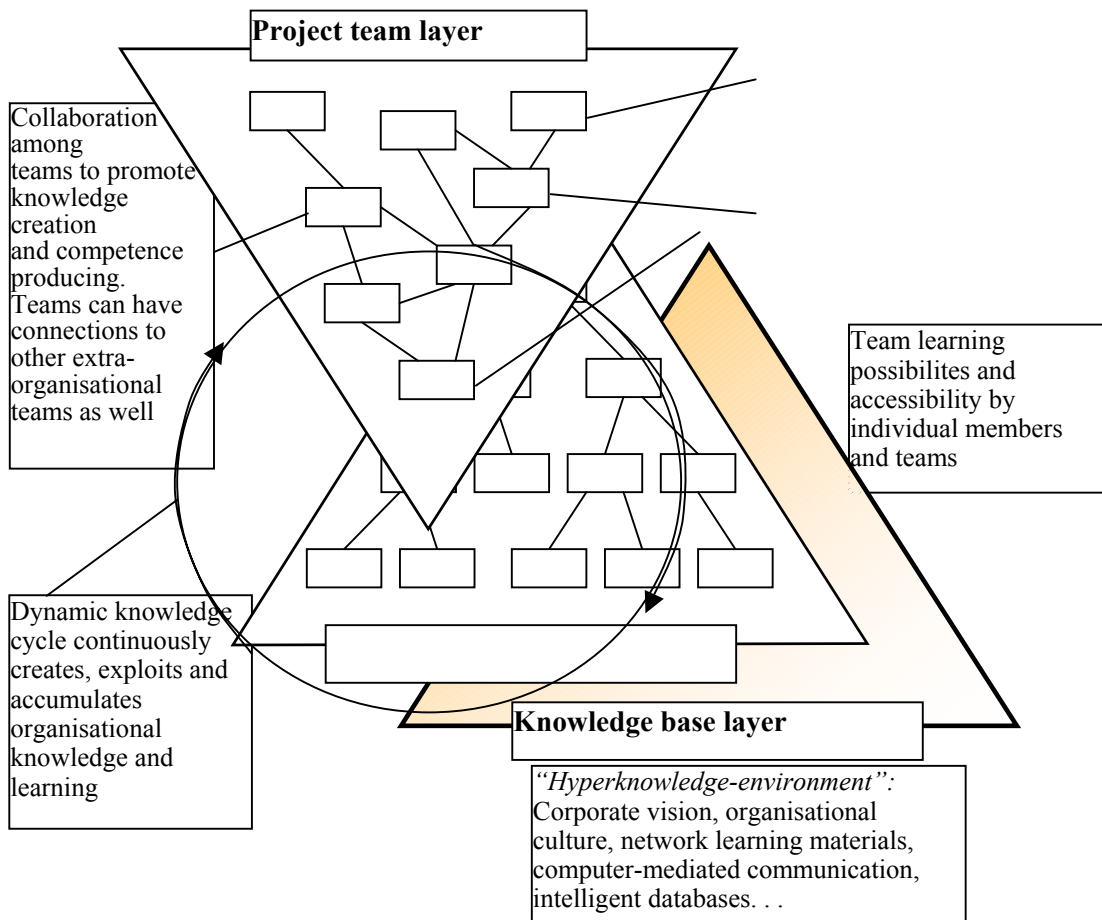
organisational learning and knowledge management in order to improve Europe's competitiveness in the global market. (see e.g. Koski 1998.) Open and flexible team learning as well as new eLearning environments founded on information technology are central to this process of networking.

OUTLINING FLEXIBLE TEAM LEARNING AND LEARNING NETWORKS IN ORGANISATIONAL CONTEXT

It has been emphasised on several occasions that competence in technology and in particular computer technology form the critical foundation for knowledge intensive work in the future (Raivola & Vuorensyrjä 1998). The decisive competition factor now is how computer technology and information systems can be applied to people's everyday line of action. Senge (1990) purports that in a competitive situation learning within an organisation must happen faster than in competing organisations. According to the principle of team learning, this means, for example, that people create their own reality, are conscious about it and able to change it as a result of learning. Learning is thus about internalising things, producing new knowledge and the ability to act in a new way rather than merely mechanically receiving information. We might talk about competence creation (cf. e.g. Raivola & Vuorensyrjä 1998) when indicating the integration of human resources such as knowledge, competence and team learning as the most important resource in an organisation. The knowledge system and ICT should support the processes of human knowledge and knowledge creation. It would be possible to develop a hyperknowledge environment which would meet human capacity to create, generate, store and utilise knowledge. This knowledge environment could serve as the basis for learning and reflection upon one's action independent of time and place. Furthermore, it could serve as a communication network and channel of knowledge exchange between the different parts of the network.

While outlining the processes of knowledge creation and making it visible in organisations, Nonaka et al. (1995) have employed the hypertext analogy and delineated a model of the so-called hypertext organisation to describe the potentials of making professional competence and tacit knowledge visible in an organisation. According to them, the hypertext organisation consists of interrelated layers or contexts. A business enterprise, for example, has three different kinds of layers. The first one is the business/administration system layer, that is, the business level, the second the project-team layer and the third the knowledge base layer. The central layer is that of the "business-system", in which administrative routines are implemented. Since the hierarchical bureaucratic structure is well-suited for effectively implementing routines, this layer resembles more of a hierarchic pyramid. The top layer is the so-called project-team layer, in which teams operate in creative, knowledge producing and analysing tasks such as product development and innovation. Team members come from different units in the organisation's business system and commit themselves to the team until the project is completed. The "hyperknowledge base layer", which forms the core and storage for knowledge

created at the other above mentioned levels of the organisation, serves as a kind of sub-base of action. One must bear in mind that this level does not form an actual organisational unit, but covers, for example, the firm's goal and vision of action as well as the organisational culture and technology at the knowledge system level. The aim (idea) of the community comprises two complementary elements: ideology and vision. Ideology consists of core values and of the description of the purpose of action. Ideology describes the soft core of action, which remains unchanged or changes very slowly. The vision is both concrete and totally imaginary picture of the future. To attain this picture requires much effort and it still is nowhere near realisation. Organisational culture manifests itself in its members' modes and lines of action as well as in its "invisible" cultural essence. The community's aims and organisational culture jointly create the so-called implicit area of tacit knowledge with regard to the knowledge layer of the organisation. Technology (e.g. knowledge systems, information networks, production technology) forms the explicit, visible area of the organisation's knowledge system. According to Nonaka and Takeuchi (1995), the processes of competence and knowledge creation in the organisation are concretised as a kind of dynamic process and cycle, in which knowledge passes across the three above mentioned layers. The question is for shared and distributed expertise and how the knowledge creation process is utilized (Nonaka & Konno 1998).



Picture 1: Learning teams and learning networks adapted from Nonaka's and Takeuchi's

Central to the process of knowledge creation in Nonaka's and Takeuchi's (1995) hypertext organisation is a conceptual distinction between tacit knowledge and explicit, conceptualised knowledge developed by Polanyi (1966). Tacit knowledge refers to personal and context-bound knowledge. It is therefore difficult to specify and convey it to others. We may speak of tacit human capital as well (Vuorensyrjä 2001). The integration of tacit knowledge into the learning process is just what is central to team learning. Explicit knowledge refers to conceptual knowledge, that is, constructed and externalised in a meaningful form, which is easy to communicate, as well. Tacit knowledge includes, for example, an individual's models of thought such as perspectives, beliefs and viewpoints as well as more technical competence such as know-how and skills of the hand. Various choices, problem-solving and innovations take place in the comprehensive area of tacit knowledge. Nonaka's and Takeuchi's (1995) model awards a key role to the process of knowledge externalisation, that is, the dynamic knowledge circle described above. Externalisation refers to transforming tacit knowledge into explicit, conceptual knowledge. In the transformation process of knowledge externalisation the individual's competence, intuitive understanding or hunch are conceptualised and made explicit by means of human interaction. What was originally intuitive, individual knowledge or competence, is thus transformed into explicit knowledge of a team and after this, of the whole organisation. Team work, that is, team learning within and between teams is central to the idea of making tacit knowledge and competence visible. The change is thus not only a matter of the effective utilisation of information technology and information networks but first and foremost of seeing human knowledge and mental capital as an important resource. Information networks as the basis for learning environment can certainly be important in themselves as a communication channel and enabler of team learning. It can be a place for interaction and shared expertise in virtual world instead of real space and time. (cf. Nonaka & Konno 1998). This virtual world can be a place where new knowledge is created and integrated to existing knowledge base. However, the point of departure is that the organisation's action and operational context can be changed through teams, through the idea of team learning and eLearning into a direction where knowledge creation and conceptualisation are intensified, which in turn enables and supports learning at the level of individuals, teams and organisations.

BARRIERS FOR EFFECTIVE TEAM LEARNING AND LEARNING NETWORKS

The aims of team learning and distributed expertise are not always self-evident, even though the management of an organisation regard them as strategic goals. In organising learning in work one should thus always pay attention to the possible barriers for learning, as well. Knowledge intensive fields operate in the middle of a flood of information. Coping with work requires that one is constantly able to

receive, process, assimilate and organise information. Haste, tight schedules and information oversupply give rise to problems with regard to the above mentioned efforts to generate new knowledge, manage learning networks and learning in work. This oversupply leads to an information overdose, exhaustion and stress. Information overdose is a term launched by Koski (1998) denoting powerlessness in the face of an accumulating mass of knowledge owing to the flood of information. One might also assume, as Karvonen (1999) optimistically suggests, that mechanisms to prevent and filter the flood of information will develop alongside the increase of the flow of information. Here it is important to be able to utilise essential and useful information selectively and ignore excess information. Continuous capacity to assimilate and construct new knowledge and to up-date old knowledge are required of the learner in orienting towards information society and team learning situations. The skill of being able to critically evaluate knowledge and its viability becomes increasingly valuable in the face of the accelerating flood of information and in open eLearning environments (Korhonen & Väliharju 1999).

In reality, it is perhaps difficult to find ideal organisations applying team learning. It is, however, important to examine organisations from the points of view of team learning and learning networks, since it helps organisations develop their action and directs attention to the processes of self-directed learning, independent problem-solving and independent initiative. Social networks based on learning teams are often hard to control and implement. Openness, flexibility and tolerance of change are required of participants. Networks based on learning and change management hardly succeed unless the problems are faced. Sarala & Sarala (1996) set forth the following thresholds for implementing learning organisations, which are necessary to highlight also here:

As for work commitment required in learning organisations, total success is hardly likely. Work commitment requires high levels of motivation and possibly other incentives apart from the aims of mental growth. It is utopian to think that everybody wants to learn and develop themselves in work on a continuous basis. Busy pace of work, exhaustion and information overdose often take their toll.

A central problem related to organisations is the division of power and the staff's opportunities for participation. Changes in organisational structures are often about issues of power and of someone experiencing losing one's position, and the general management culture does not necessarily favour far-reaching division of power and lowering of organisational hierarchies.

The management's desire to contribute to the development and learning of the entire staff is a rare occasion, because it always requires economic investment as well. Analysing one's work and questioning routines are time-consuming and even anxiety-provoking processes whose benefits are not seen until over a lengthy period of time. It is never very clear to convert such benefits into money.

It is perhaps difficult to distinguish the ideas of team learning, team work and distributed learning network from other efforts directed at the development of productivity, co-operation and quality. This would require, for example, that the key persons in organisations better acquaint themselves with team work and the organisation of team learning. Organisations need concrete basic knowledge of

network learning environments and eLearning in order that appropriate learning environments and ICT resources can be designed.

Flexible, team learning and learning networks are as yet not a reality to the extent it is implied by their enthusiastic advocates. These concepts and views, however, offer new perspectives on staff development and in particular on seeing the staff as a core resource in organisational development and change management. As Raivola and Vuorensyrjä (1998) maintain, there is a need to re-evaluate the concepts of career, identity and occupation. Employees' motivation in particular in knowledge intensive fields is an important aim for the organisation, since the organisation may need the employee more than the employee needs the organisation. This holds true also for networks consisting of teams and "clusters" of teams. The learning network as a whole is more than the sum of its component parts. The strength of team-based learning networks lies in its members' diversity, with each member contributing his or her knowledge and competence into the action. It may as yet be difficult to acknowledge this diversity. Team learning should be founded on common language which evolves through group communication. (Boland & Tenkasi 1995.) The question is how to combine the many ideas, thoughts and various goals into a functioning whole which often remains a problem in team learning. It is a question of a kind of synergy problem in the learning network. Each and every member of the organisation has a view of and opinion about the whole and future of the organisation and network. Senge (1990) suggests that the attainment of the aims of action becomes difficult, if individual views and visions differ greatly or even contradict each other. Only joint scrutiny and open discussions at different organisational levels can attain a mutual understanding of how to direct action and prospective development.

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