The learning infrastructure of self-managing work teams

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The learning infrastructure of self-managing work teams

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THE LEARNING INFRASTRUCTURE OF SELF-MANAGING WORK TEAMS

PROEFSCHRIFT

ter verkrijging van
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en de co-promotor prof. dr. M. Mulder

Voorwoord (*preface in Dutch*)

Dit onderzoek gaat over ondersteuning en condities voor zelfsturend leren. Het belang van 'sociale'ondersteuning komt daarin sterk naar voren. Die uitkomst kan ik van harte onderschrijven vanuit mijn eigen leerervaringen tijdens het maken van dit proefschrift. In dit voorwoord wil ik daarom vooral een aantal mensen bedanken voor hun steun.

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Woerden, november 2002

Saskia Tjepkema

Outline

Self-managing work teams as an organisational concept can be traced back to the 1940s, when the concept was first developed as part of the Socio Technical Systems Design theory. In recent years, the use of self-managing work teams has increased considerably. As organisations strive to become learning organisations, they search for ways to increase opportunities for individual and organisational learning. Self-managing work teams are believed to provide a fitting context to achieve both. It is from this perspective that self-managing work teams were studied in this PhD project.

As a prerequisite for supporting organisational learning, it is imperative that self-managing work teams form a nurturing context for individual learning. Current evidence however, suggests that though teams potentially constitute a rich learning environment, their potential in this respect is not always fulfilled. Therefore, the issue of supporting learning deserves specific attention.

The main problem statement underlying this study was the question how learning within self-managing work teams can be facilitated. This question was not addressed at the activity level, but at a more structural level: the learning infrastructure of the team was the focus of attention.

A framework was designed for the 'learning infrastructure' of self-managing work teams, which can be used as a tool for an integral analysis and description of support and conditions for learning. By means of literature review, group interviews and case studies, it was investigated what elements of the learning infrastructure of self-managing work teams appear to be especially important.

The first chapter of this PhD-thesis describes the background and nature of self-managing work teams (chapter 1). Though supporting individual learning was the centre of attention, the use of self-managing work teams was deliberately placed within the broader perspective of organisational learning. Because self-managing work teams are increasingly implemented with the intent to build a learning organisation, and individual learning within these teams basically form an important link in realising organisational learning, the possible contribution of self-managing work teams to organisational learning directly impacts the relevance of the study. Therefore, the link between self-managing work teams with the larger conceptual perspective of the learning organization was studied explicitly (chapter 2).

Next, the actual problem statement, research questions and design are described (chapter 3).

A first tentative framework for the learning infrastructure of self-managing work teams was developed based on literature (chapter 4). This model was validated and expanded, and used to gather data on important elements in the learning infrastructure by means of group interviews and further literature analysis (chapter 5). Because the empirical basis for these elements could not be guaranteed, and because the picture was still rather fragmented, three case studies were undertaken, providing examples of learning infrastructures in practice (chapter 6).

Finally, conclusions are drawn with regard to the research questions, and the results of the study are discussed (chapter 7).

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1 Self-managing work teams

This study attempted to clarify ways in which learning within self-managing work teams can be facilitated, or, put otherwise, it made an effort to describe the learning infrastructure of self-managing work teams. In order to 'set the stage', this chapter provides an exploration of the background and nature of self-managing work teams. In section 1.1, organisational theory underlying self-managing work teams is described. Section 1.2 provides a definition and description of self-managing work teams, while section 1.3 explores main reasons for implementing such teams.

1.1 Socio Technical Systems Design Theory

The concept of self-managing work teams was originally developed as a key element within the Socio Technical Systems Design Theory (STSD). This section reviews the headlines of this organisational theory (see also De Leede, 1997; Stoker, 1998).

A brief history of STSD

The origins of the self-managing team concept lie in the late 1940's and early 1950's. In an effort to find organisational forms that would help increase productivity in post-war Britain, researchers from the Tavistock Institute in London discovered coalmines in Durham in which miners worked in highly autonomous groups[i]. The productivity of these teams was higher, while absenteeism rates proved to be lower than in the more traditionally organized mines, where work was organised around individual tasks and possibilities for self-management were only very limited.

This discovery sparked the development of a new theory of organisation, labelled Socio-Technical Systems Design (STSD) since it aimed to improve organisational effectiveness by optimising both technical and social subsystems within the organisation. The first consist of technical equipment and process layout, while the second subsystem refers to people carrying out the work. Van Eijnatten (1993) considers STSD to be a response to the unilateral emphasis placed on either the technical or the social aspects of the organisation in previous theories at that time, such as Scientific Management and Human Relations. STSD is a holistic approach, it seeks to integrate and optimise both aspects of organisations into one 'sociotechnical entity' (e.g. Pasmore, 1988; Trist, 1981; Van Eijnatten, 1992).

Since these early days, STSD has developed into an elaborate theory of organisation, with an extensive set of design rules and principles. The theory has in the meantime

evolved from what is now called 'Classical STSD' into 'Modern STSD'[ii]. The main difference between STSD in the pioneering stage and contemporary STSD is that the focus originally lay on the *group task* (as opposed to alternative approaches to improving organisations in that era, such as job enlargement and job enrichment, which centred around the individual task), while modern STSD - which is really more a set of different approaches, with different names - focuses on *redesigning the organisation as a whole* (e.g. Kuipers & Van Amelsvoort, 1990). Especially the Dutch approach of Integrated Organisation Renewal (IOR) seeks to reach what is called the 'advantageous equilibrium state', in which the amount of internal control of an organisation(al system) matches the actual demands. To that purpose, first an environmental analysis is conducted, to determine the nature and degree of external demands on the system. Then, the organisation is redesigned in order to achieve optimal fit between organisation and environment (De Sitter, 1994; Hoevenaars, 1991; Peeters, 1995; Van Eijnatten, 1993; Van Amelsvoort & Kuipers, 1990; Van Hooft et al., 1996). So, though the theory entails more, self-managing work teams are the most widely used design feature of STSD[iii].

Bureaucratic design principles

STSD proposes a radical break with the so-called basic bureaucratic principles for organisation:

1. Maximum segmentation of the work process and grouping tasks by function;
2. Separation of decisions regarding control and coordination (management, or regulation) and realisation of the work process (transformation from input to output). Or: separation of 'thinking' and 'acting'.

These principles originally stem from Scientific Management theory, as developed by Taylor in the first half of the previous century.

Taylor's objectives were to increase productivity through a highly efficient organisation of the production process, and through optimal cooperation between management and employees. In his view, management's task was to support employees in carrying out the work, by designing an optimal work process. He contended that most productivity losses originated from the ad hoc way in which work was being organised and carried out. Basically, every employee had his own preferred working methods. It was management's job to:

- Observe highly effective employees, to see how they performed the tasks;
- Make a systematic description of this work method;
- Improve the work method by eliminating unnecessary activities, and by designing new tools;
- Train employees in using this 'scientifically' researched work method

Hence, the name 'scientific' management. Only in this way would an effective cooperation between management and employee develop, by which both would benefit. Interestingly enough, Taylor stressed that part of management's job is also to keep the work methods up-to-date, and to continuously improve them. In doing

so, management should specifically invite employees to provide suggestions for improvement of the work process and tools (Taylor, 1922).
Taylor emphasized that work of lower-level employees should be highly specialized, standardized and very much simplified. In order to achieve this, the work process had to be segmented into small parts. He also advocated carefully written job descriptions, which management could use to provide detailed instructions to workers (Taylor, 1922).

For understanding these bureaucratic principles, it is necessary to consider that they were formulated for companies with a very large work force, performing hard manual labour, and at a time when the view of the organisation as a machine, and as a closed system was leading (Kanigel, 1997). Ansoff (1985) characterizes this period as the era of mass production. Industrial activities were predominantly focused on the expansion and perfection of techniques for mass production, with the major goal being to lower cost prize per product. The emphasis was on production, not - or hardly- on strategy. The central premise was that organisational transactions with the environment were predictable and controllable, and transformations within the organisations fully programmable. And, to a large extent, they were, as a result of market slack: products that were being manufactured were usually sold without effort (Ansoff, 1985; Kuipers & Van Amelsvoort, 1990). Moreover, U.S. companies at that time were confronted with large groups of workers who had hardly received any formal schooling, and sometimes didn't even speak the language, because they had only recently immigrated. Taylor's principles were also devised to enable organisations to quickly and effectively employ these people (Lawler, 1986).

His approach to designing work ultimately resulted in the assembly line, and the line-staff model of organisation, in which 'thinking' (management and staff departments) and 'doing' (the operating core) are strictly separated. Mintzberg's model of the machine bureaucracy is in essence built on these Scientific Management principles (Mintzberg, 1983).

STSD's critique of the bureaucratic organisation model

Over the years, STSD-scholars have argued that this bureaucratic paradigm of organisations has several inherent flaws (De Sitter, 1994; Kuipers & Van Amelsvoort, 1990; Pasmore, 1988; Van Hooft et al., 1996). As an alternative, both traditional and modern STSD theories propose to organise the work process around self-managing work teams[iv].

One of STSD's basic premises is that it is necessary to abandon the bureaucratic principles of maximum segmentation of the work process and reliance on extensive control mechanisms and procedures, because these are not most effective when it comes to meeting the essential demands on organisations. STSD distinguishes between demands in three areas (De Sitter, 1994; Kuipers & Van Amelsvoort, 1990; Peeters, 1995; Van Amelsvoort & Scholtes, 1996; Van Hooft et al., 1996):

- Quality of *organisation,* (indicators include: control over quality and delivery times, flexibility, and innovation);
- Quality of *working life* (QWL) (indicators include: low absenteeism, tolerable work stress, low turnover, possibilities for professional development of staff);
- Quality of *working relationships* (indicators include: shared responsibility, commitment and active participation in work meetings).

Achieving a high quality of organisation, of working life and of work relationships is considered indispensable to achieve the overriding objective: *productivity*. According to STSD, a more effective model than the bureaucratic model of organisation is possible, which leads to higher productivity.

Without repeating the thorough analysis STSD-scholars such as De Sitter (1994), Kuipers & Van Amelsvoort (1990) and Pasmore (1988) made, the major reasons for limited effectiveness of the bureaucratic model according to STSD stem from the absence of possibilities to regulate work and work flows at shop floor level. This separation of transformational and managerial tasks has a negative impact on the quality of organisation. First of all, because it presupposes a process free of disturbances and interruptions. However, this is only a theoretical notion; in practice, all processes meet disruptions. In fact, because of the extensive breakdown of the work processes into small tasks and subtasks, each subsystem has a considerable amount of interfaces with other subsystems. This in itself leads to a high risk of disruption of the work process in bureaucratic organisations (Van Amelsvoort & Scholtes, 1994). According to STSD, people in the operating core should be able to cope with these disruptions in order to ensure an optimal flow (De Sitter, 1994).

As a second negative effect of the fragmented organisation of the work process, production of a product or delivery of a service takes place in a long chain of activities with many chain links. Likewise, control and management of the primary process also proceeds by means of an extensive chain with many hierarchical links (Van Amelsvoort & Scholtes, 1994). As a result there is *no overview* of the product and process as a whole, which is a barrier to improvements and which increases the amount of organisational complexity (De Sitter, 1994).

A third feature of bureaucratic organisations is the extensive amount of support staff, and their limited powers to support the primary process adequately and timely. It is difficult for specialists in staff departments to facilitate a process from a distance. STSD-theorists argue that it is more efficient to integrate support within the primary workflow, instead of separating it from the operating core (Van Amelsvoort & Scholtes, 1994; De Sitter, 1994; Kuipers & Van Amelsvoort, 1990).

In sum, the lack of clarity of the entire process and the lack of decentralized possibilities for control, make it difficult for the organisation to respond timely and adequately to disturbances, which renders the system very sensitive to disruptions (Van Amelsvoort & Scholtes, 1996).

The absence of possibilities for regulating the workflow at the shop floor level also negatively affects the *quality of working life*. Workers may observe problems, maybe sometimes even predict them, but they have no room to implement solutions. Employees' lack of opportunities to deal with these problems induces stress and thus reduces the quality of working life. This is further threatened by the individual nature of work and lack of cooperation with colleagues, both of which are considered to increase alienation (De Sitter, 1994; Christis, 1993).

And, finally, STSD also argues that the inherent design features of bureaucratic organisations negatively impact the *quality of working relations*. As workers often feel less committed, there is no shared feeling of responsibility, which hinders communication between management and employees (De Sitter, 1994).

Furthermore, STSD theorists contend that this negative system sustains itself. Having few possibilities for coordination and control of the work flow at the shop floor level demands a strict control of input for each work place, which in turn means that more procedures and control mechanisms are imposed on the system in order to ensure standardization of input. This makes the system even more sensitive to disruptions and serves to decrease employees' sense of control and commitment, which – in turn - negatively impacts the quality of working life and of working relationships (De Sitter, 1994).

Thus, according to STSD, the bureaucratic organisation model with its extensive division of labour and its reliance on control and procedures faces some inherent dangers to productivity. The most important ones being (Pasmore, 1988; Van Amelsvoort & Scholtes, 1996):

- Threats to the quality of *organisation*: low ability for innovation (organisational rigidity), low flexibility, low problem-solving capacity, poor quality, low amount of control over costs and delivery times, complex control mechanisms, unclear division of responsibilities;
- Threats to the quality of *working life* (QWL) high risks of work stress and alienation, troublesome communication, low worker commitment;
- Threats to the quality of *working* relationships: tense relations between operating core and management, and operating core and staff departments.

STSD's main organisational principles

As an alternative to the bureaucratic model, STSD proposes fundamentally different design principles. The general idea is to take the work flow as a focal point (a process known as 'parallelisation'), and divide this process into logical, coherent, parts, which can be carried out by a team or work group ('segmentation'), and hand these teams responsibility for the whole task (integration of control & coordination and the transformation process) (see De Sitter, Den Hertog & Dankbaar, 1997). Guiding principle for design of the group tasks is that the interdependence of the

tasks within a cluster should always *exceed* the interdependence of each of these tasks with the remainder of the workflow (Kuipers & Van Amelsvoort, 1996).

So, this organisational model has two basic design rules (Molleman & Van der Zwaan, 1994):

- Process-oriented instead of functional structure;
- Minimal segmentation of the work process:
  - 'Horizontal' integration: group tasks instead of individual tasks;
  - 'Vertical' integration: integration of managerial (regulatory) tasks and primary process.

Main rationale behind these principles is that by abandoning the principle of maximum work division and placing opportunities for regulation of the work process with those people who perform the work instead of with management, commitment grows, stress is reduced, and overall control over the process increases (because it is now possible to make changes during the work flow, instead of only registering disruptions afterwards) (De Sitter, 1994; Kuipers & Van Amelsvoort, 1990; Van Amelsvoort & Scholtes, 1996; Van Hooft et al., 1996). STSD's design rules of process orientation and minimal segmentation can be recognized in the definition of self-managing work teams as it is used in this study.

1.2 The nature of self-managing work teams

A number of labels exists for the concept of self-managing work teams[v]. Here, it was decided to use the term 'self-managing work teams' (or the Dutch equivalent 'zelfsturende teams'), because this is one of the most often used terms, and seems to be most appropriate. Terms such as (semi) autonomous work groups on the one hand, appear to imply more freedom than the team actually has, and might give the impression that management has no control over the team at all (see Lawler, 1986). The mere term '(true) team' on the other hand also does not qualify, because this is too general in nature. Lately, this term is used more and more in reference to self-managing teams (e.g. Katzenbach & Smith, 1993), but is considered to be not concise enough. This section provides a definition and description of self-managing work teams.

Definition

For the purpose of this study, over 40 definitions of self-managing work teams have been analysed for common elements (see appendix I for an overview). On the basis of this analysis, a comprehensive definition was compiled, which served as a basis for this study. A self-managing work team was defined as:

- A permanent group of employees who work together on a daily basis, who, as a team, share the responsibility for all interdependent activities necessary to deliver a well-defined product or service to an internal or external customer.

- The team is, to a certain degree, responsible for managing itself and the tasks it performs, on the basis of a clear common purpose.
- In order to do so, the team has access to relevant information, possesses relevant competences and other resources, and has the authority to independently make decisions with regard to the work process (e.g. solving problems).

Below, an explanation is provided for each of the elements from this definition.

Permanent work group

Self-managing work teams are described as a *permanent group of employees who work together on a daily basis* in approximately one quarter of the definitions (e.g. Hitchcock & Willard, 1995; Kuipers & Van Amelsvoort, 1990; Liebowitz & Holden, 1995; Pasmore & Mlot, 1994; Peeters & Van der Geest, 1996; Stewart & Manz, 1995; Van Amelsvoort & Scholtes, 1994; Wellins, Byham & Wilson, 1991). It was included in this definition, because it was deemed important to distinguish self-managing work teams from work teams with a temporary character (e.g. project teams or special task forces) and teams in which employees participate on a part-time basis, *in addition to* their operational tasks (e.g. process improvement teams, TQM teams).

Shared responsibility

That team members collectively *share responsibility* for the team's task, is a recurring element in about half of the definitions (e.g. Hitchcock & Willard, 1995; Luer & Palleschi, 1994; Van Amelsvoort & Scholtes, 1994; Wall, Kemp, Jackson & Clegg, 1986). The importance of this aspect is especially stressed by Katzenbach & Smith (1993), who claim that *'no group ever becomes a team, until it can hold itself accountable as a team'*. Shared responsibility is a prerequisite for a reward system based on group performance, instead of individual performance, and is in general indispensable to create a team focus instead of a focus on individual goals (see also Molleman & van der Zwaan, 1994).

An interesting finding is that, where some authors speak of 'giving' employees responsibility (e.g. Stewart & Manz, 1995), others see teams as 'accepting' responsibility (e.g. Carroll, 1996). For this definition, a choice was made not to make statements about whether responsibility is 'taken' or 'given', but to focus on the fact that the team 'carries' the responsibility. The question of how this situation was achieved is considered a matter of implementation, and, perhaps, of the outcome of a more philosophical debate on the question of whether it is at all possible to 'give' responsibility to, or 'empower' employees.

All interdependent activities necessary to deliver a well-defined product or service

More than half of the definitions state that a self-managing team is 'responsible for the completion of a relatively *whole* piece of work' (e.g. Cohen & Ledford, 1994; Lawler, Mohrman & Ledford, 1995; Pasmore & Mlot, 1994). This means the team is responsible for a complete set of *interdependent tasks* necessary to realize this work process: not only tasks related directly to the primary process, but also those that are

necessary to support the primary process fall within the task domain of the team (Goodman et al., 1990).

It is important that the team works on a *well-defined and identifiable product or service*. This may consist of an end product or service, for instance 'a refrigerator' or 'a fully processed insurance claim'. But usually teams work on an identifiable *part* of the primary process, rather than a completed end product, for example 'a refrigerator motor' or 'the intake of an insurance claim' (see Orsburn et al., 1990). As a result of this task interdependence, a self-managing team is composed of all interdependent employees who must work together to complete a 'whole', or intact (identifiable part of a) process or product. So, whenever self-managing work teams are implemented in an existing organisation, members of staff departments, such as maintenance technicians or quality engineers, are often reassigned to these teams, enabling the team to handle not only the primary task but also connected activities such as maintenance, solving technical disturbances and quality control (Hitchcock & Willard, 1995).

Internal or external customer

Self-managing work teams do not operate in a vacuum. They provide products or services to *internal or external customers*. This element is not mentioned in many definitions, but is included in this study's definition. It is considered an indispensable element of the rationale behind self-managing work teams: namely that the team has the means to adjust itself to its environment, and thus provide optimal service to customers, enhancing an organisations' control of the entire work process (De Sitter, 1994; Kuipers & Van Amelsvoort, 1990, Wellins et al., 1991). Also, survey research from the US indicates that many team members in practice are responsible for communication with customers and suppliers (Wellins et al., 1991).

Responsible, to a certain degree, for managing itself and the tasks it performs

The fact that self-managing work teams are responsible for managing themselves and the task they perform is the most essential element of the definition, and therefore also features in almost all of the definitions that were analysed. In general, two types of functions can be distinguished within each primary process (see Peeters, 1995, Van Amelsvoort & Scholtes, 1994):

- *Operational functions:* realising the intended transformation from input to output;
- *Regulatory functions*: such as planning, adjusting to contingency, solving disturbances and monitoring, maintaining and improving team performance.

More popular management language speaks in terms of 'acting' and 'thinking' (Senge, 1990a; 1993). In the bureaucratic model of organisations, regulatory functions ('thinking') are performed by managers (therefore they are also referred to as 'managerial functions') and staff, while employees are concerned solely with the operational tasks ('doing'). This is based on the idea of Scientific Management (Taylor, 1922). In a self-managing work team the team fulfils managerial or regulatory functions *and* realizes the transformation at the same time. Integrating these responsibilities in the team tasks is what enhances team autonomy (Sips &

Keunen, 1995). This shift in managerial responsibilities is clearly represented in table 1.1, provided by Hackman. It clearly illustrates the difference between traditional, manager-led work groups and self-managing work teams.

Table 1.1 Shift in managerial responsibilities (from: Hackman, 1987)

Design of organisational context	**Area of**	**Management**	
Design of the group as a performing unit		**Responsibility**	
Monitoring and managing processes		**Area of**	**Team**
Executing the task			**Responsibility**
	Manager-led work teams	*Self-managing work teams*	*Self-designing work teams*

Interestingly enough, only about seven definitions in the total group of 40 highlight this fact. It is, however, considered to be of such importance that it is included in the definition above by stating that teams are always *responsible to a certain degree*. De Leede & Stoker (1996) conclude that the fact that this aspect of self-management is often overlooked, is one of the shortcomings of most definitions. Peeters (1995) also insists, on the basis of empirical data, that the definition of self-managing work teams should reflect the dynamic nature of these teams. Team autonomy is not a static feature.

First, because of the nature of work, the organisation or the team members, organisations may legitimately opt for less far-reaching forms of self-management than 'total' self-management. Each organisation decides for itself how much of the managerial responsibility is to be handed down to the self-managing work teams. For one organisation this may entail virtually all managerial decisions (e.g. the organisations who opt for self-designing teams), others may choose for a less rigorous delegation of responsibilities. Van Amelsvoort & Scholtes (1994) distinguish between four degrees of self-management, namely:

1. Team makes decisions autonomously;
2. Team makes decisions together with management;
3. Team gives advice on this matter;
4. Team has no influence.

It is, in principle, possible to decide how much authority will be handed down to the team for each managerial, or regulatory, function separately.

Secondly, team responsibility usually changes over time as teams gradually assume more control over different tasks (Carroll, 1986). Or, as Hitchcock & Willard (1995) point out:

> 'It is important that self-direction be viewed not as a destination but as a process. The teams do not start out totally self-directed, nor do they ever totally get there. There is always something new for them to learn, a new responsibility for them to assume.'
>
> (Hitchcock & Willard, 1995, p. 5)

Teams can only develop into 'true' self-managing team after some years. One could consider the 'real' self-managing team as being the final stage of team development. In fact, a Dutch scan of self-managing work team practices revealed that only 4 to 5% of all self-managing work teams in the Netherlands can be considered to be truly autonomous. Most teams have not reached this final stage of team development yet, it is even unclear whether they will ever reach that stage, but they are called 'self-managing work teams' nonetheless (Van Amelsvoort & Benders, 1996).

For these two reasons (firms make choices regarding the amount of team autonomy, and team autonomy goes hand in hand with team development), it has been decided to formulate the definition in such a way that it reflects the fact that there are different degrees of self-management, or team autonomy. Thus, it is not possible to provide a general overview of all of the managerial responsibilities that self-managing work teams possess. Reports about these responsibilities vary widely. On the basis of a survey research under 500 companies, Wellins et al (1991) constructed an overview of levels of autonomy, which serves as a useful illustration of some of the more typical tasks of self-managing work teams[vi]. The overview is presented in table 1.2 on the next page.

Level 1 represents the point at which a newly formed team typically begins. The responsibilities are similar to the level of responsibility each of the individual team members possessed before teamwork was implemented. A team at level 4 has assumed many more of the possible job responsibilities. Wellins et al. (1991) estimate this to be about 80%, probably mainly to stress the point that it will be impossible to assume a 100% responsibility. Some authority will always remain at management level: no one group in any organisation can be completely autonomous. It can only be conditionally or semi-autonomous (Trist, 1993). Self-managing teams are autonomous within limits; they have freedom to operate within a specified domain and are bound by explicit rules and performance objectives (Sips & Keunen, 1996).

Table 1.2 Responsibilities of self-managing work teams (from: Wellins, Byham & Wilson, 1991)

Responsibility/authority	*Degree of autonomy:*
1. Making compensation decisions	|
2. Disciplinary process	|
3. Team member performance appraisal	Level 4
4. Product modification and development	80%
5. Budgeting	|
6. Facility design	|
7. Equipment purchase	Level 3
8. Choosing team leaders	60%
9. Vacation scheduling	|
10. Cross-functional teaming	|
11. Hiring team members	Level 2
12. External customer contact	40%
13. Managing suppliers	|
14. Continuous improvement	|
15. Quality responsibilities	Level 1
16. Production scheduling	20%
17. Equipment maintenance and repair	|
18. Training each other	|
19. Housekeeping	|

Common purpose

A *clear common purpose* for the work team is mentioned in a quarter of the definitions that were analysed (e.g. Foster et al., 1995; Hitchcock et al., 1995; Peeters & Van der Geest, 1996; Ray & Bronstein, 1995). It is considered important mainly for two reasons:

- In a team environment, people are not as much managed, controlled, or supervised, but rather their shared vision of the organisation's, and team's, purpose guides their actions and supports cooperation (Ray & Bronstein, 1995; Senge, 1993). The focus on goals serves as a mechanism for coordination (Mintzberg, 1983) and provides boundaries between which the team can operate autonomously (Bomers, 1990).
- It is not possible for a team to improve its performance unless clear performance goals have been identified (Katzenbach & Smith, 1993).

Often, teams set these performance goals in collaboration with management, the amount of involvement the team has in the goal-setting process depending on the level of autonomy of the team (see earlier). In some cases, e.g. in the early stages of teamwork, management retains control over such strategic decisions. Management then decides on the 'what', while the team itself decides on the tactical issues, such as work methods, planning and organisation: the 'how' (see Kulisch & Banner, 1993). As the team matures, it can participate more actively in goal setting.

It is considered important that self-managing work teams not only consider the team goals, but rather, also have an overview of the link with organisational goals. When commitment to team goals and performance becomes too great, groupthink may occur (see Jarvis, 1972). This has several negative effects:

- Conformism: team members tend to conform to the group norm rather than stand out with new ideas or different opinions, which leads to a decrease of the team's capacity for innovation. The group responds less adequately to changes, and tends to behave as a closed system.
- A reduced ability to establish team performance objectively and critically.

In order to prevent this from occurring, it is desirable to create commitment of team members not only to team objectives and performance, but also to the performance and objectives of the organisation as a whole (Molleman & Van der Zwaan, 1994).

Possession of relevant information, resources and authority

Team autonomy has four elements: next to accountability, which was discussed earlier, these are *information*, *resources* and *authority* (Fisher, 1993). *Information* is necessary for the team to be able to manage its own process (Luer & Palleschi, 1994):

> 'Without (..) information about business performance, it is difficult for individuals to understand how the business is doing and to make meaningful contributions to its success. In addition, participation in planning and setting direction is impossible for employees to make good suggestions about how products and services can be improved and about how work processes in their area can be done more effectively. Finally it is also difficult for employees to alter their behaviour in response to changing conditions and receive feedback on the effectiveness of their performance and that of the organisation. In the absence of business information, individuals are usually limited simply to carrying out prescribed tasks and roles in a relatively automatic bureaucratic way. '
>
> (Lawler, Mohrman & Ledford, 1995, p. 9.)

It is especially important that the team receives feedback on this performance: this enables the team to decide whether or not current strategies need adjustment (Cohen & Ledford, 1994; Wall et al., 1986).

Resources enable a team to implement team decisions (Kuipers & Van Amelsvoort, 1990). Ashby's law of requisite variety requires that the diversity of actions and reactions within any self-organizing group have to (at least) match the variety in the team environment and the amount of insecurity in this environment, in order for the group to be able to respond adequately to these changes (Kuipers & Van Amelsvoort, 1990; Sips & Keunen, 1996). In other words: the *possibilities* for control have to outweigh the *need* for control (De Sitter et al., 1997). In practice, this means the team has to have access to enough resources to transform input of a varying

nature into desired output under changing circumstances. Moreover, resources have to be flexible, both in a qualitative and quantitative sense.
Team member competences (the *human* resources, so to speak) are an especially important type of resource. A self-managing work team has to be composed in such a way that, together, the team members possess all the competences required to complete the team task (Cohen & Ledford, 1994; Katzenbach & Smith, 1993; Pasmore, 1988; Pasmore & Mlot, 1994; Peeters et al., 1996; Vaverek, 1987; Wall et al., 1986). Flexibility in these resources can be realised regarding the team size, if new members can be added temporarily in order to make up for volume variances in output (quantitative flexibility). Flexibility can also be achieved by the team possessing more skills than necessary at any given time, so it can use these 'spare' skills when necessary (qualitative flexibility) (Molleman & Van der Zwaan, 1994). In systems theory terms, *redundancy of functions* means most members of the group are able to fulfil multiple tasks, among which not only operational tasks but also tasks in the area of control, coordination and innovation and support tasks (based on Emery, 1976). Usually this redundancy is achieved by multi-skilling employees (Dunphy & Bryant, 1996).

Authority is necessary to implement team decisions with regard to the work process. Without authority, a team can never adjust or improve the work process autonomously (Goodman et al., 1990; Pasmore, 1988; Peeters et al., 1996; Vink et al., 1996). In systems theory terms, 'minimum critical specifications' is an important mechanism to increase authority of a team. A limited amount of fixed and detailed rules and procedures enhances the teams' capacity for responding adequately to any changes in the environment or problems during work, therefore only the most critical specifications have to be defined, in order to provide maximum room for self-management (Herbst, 1974 in Kuipers & Van Amelsvoort, 1990). This increases vertical autonomy of the team. Instead of specifying rules and procedures, management only specifies critical performance criteria (with regard to aspects such as quality, productivity (output) and absenteeism), and leaves it mainly to the team to decide how to reach these objectives. This freedom of movement enables the team to respond to changes in the environmental demands during the course of work (Emans et al., 1996; Molleman & Van der Zwaan, 1994; Sips & Keunen, 1996). In terms of Mintzberg's (1983) classification of coordination mechanisms, this means that the mechanisms of direct supervision and standardization of work processes are being replaced by standardization of output (= critical specifications) and mutual adjustment. This represents a considerable change in the role of management: the role of supervisor is no longer the most important, or only role. Higher management is supposed to define performance criteria and lower level management is looked upon to enable the team in reaching these criteria, by supplying the necessary resources (both human and technical), by setting goals on the team level and by supporting the team as a 'coach' in reaching team targets (Molleman & Van der Zwaan, 1994). This draws heavily on management's competences (Van Hooft et al, 1996; Stoker, 1998).

Typically, team ownership of the process grows as it gradually accepts more responsibilities. Team ownership usually evolves from ownership over production activities ('doing the job') to ownership of production control ('coordinating the job') (Wellins et al, 1991).

Differences between self-managing work teams and other work settings

The main characteristic of self- managing teams is that the team is responsible for managing itself and the task it performs. The comprehensive definition also includes the second most important characteristic; namely that the team is responsible for a 'whole task'. This can be considered an essential element of a self-managing work team, as it is a prerequisite for team autonomy. The nature of self-managing work teams can be clarified further by drawing the comparison with 'traditional' work teams. Typical differences between traditional work settings – based on the bureaucratic organisation model - and self-managing work teams are[vii]:

- *Task domain*
  In the bureaucratic model, workers in the operating core perform production-related tasks only, whereas other organisational members (staff, managers) are responsible for support activities such as planning, quality control and maintenance (Banker et al., 1996; Goodman et al., 1990; Van Amelsvoort & Benders, 1996). By contrast, the task domain of a self-managing work team concerns a 'whole task', an integral part of the production process. The team not only carries out the core production tasks, but is responsible for the complete set of interdependent tasks which have to be fulfilled to realise a particular product or service (e.g. Banker et al, 1996; Goodman et al, 1996).
- *Innovation/improvement*
  A conventional team is usually primarily oriented towards realizing one specific set of performance targets, which is unilaterally formulated by management. Innovation or continuous improvement is not a common orientation (Fousert, 1996; Pasmore, 1988; Senge, 1993; Swieringa & Wierdsma, 1990). By contrast, a self-managing work team typically participates in goal setting (though management retains a very important role in this process). And, ideally, self-managing work teams also commit themselves to continuously raising existing performance levels, and to actively search for ways to improve or innovate work processes, services or products (Katzenbach & Smith, 1993). De Sitter (1994) refers to this as the '*autonomous innovative function of the work team with regard to both process and product.'*
- *Control*
  In a bureaucratic work setting, employees typically have no management responsibilities. The first line manager or supervisor controls issues such as choice of work method, goal setting, staffing and monitoring of performance. There is an extensive amount of standardized operating procedures, and management exerts close supervision to ensure that procedures are adhered to (Banker et al, 1996; Goodman et al, 1990; Ray & Bronstein, 1995; Van Amelsvoort & Benders, 1996).

By contrast, self-managing work teams exert greater control over their task, hierarchy and supervision are reduced to a minimum (Carroll, 1996; Van Amelsvoort & Benders, 1996). Members fulfil tasks (or participate in fulfilling these tasks) which, in a traditional work setting, are performed by managers or specialized staff departments, such as coordination, planning of the work process, distribution of work, ordering of materials, solving operational problems and even goal setting (e.g. Hackman, 1987; Hicks & Bone in Foster et al., 1995). As a result, a self-managing team can (and should) plan and coordinate its work, evaluate its performance, adjust itself to contingency and participate in goal setting as a relatively autonomous work unit (Kuipers & Van Amelsvoort, 1990).

- *Leadership/management*
  The traditional management style is primarily top-down, with strategies being formulated at the top, and passed on through the hierarchy by different management levels (Garratt, 1988; Wellins et al., 1991). In a self-managing work team, leadership is shared with the team. The role of management is not so much to direct and control, but rather to guide and support the team in reaching performance targets and realizing continuous improvement. So, the traditional role of supervisor gradually evolves into the role of 'coach' and facilitator (Fousert, 1996; Stoker, 1998; Wellins et al., 1991).
- *Job design*
  Work processes in bureaucratic organisations are typically cut up into many small tasks, which can be performed by individual workers. Because the work is segmented in so many different parts, it is difficult for employees to obtain an overview of the entire work process. Only management holds this helicopter view (Kuipers & Van Amelsvoort, 1990; Senge, 1993; Wellins et al., 1991). Where traditional work groups are typically organized into separate specialized jobs with rather narrow responsibilities self-managing work teams are made up of members who are collectively responsible for intact work processes with each individual performing multiple tasks. The work process is not segmented into several isolated individual tasks, but in more comprehensive team tasks that can be fulfilled by a group of employees (Fisher, 1993; Kuipers & Van Amelsvoort, 1990; Van Hooft et al., 1996).

The table below summarizes the main differences between traditional work settings, as represented by for instance Mintzberg's model of the machine bureaucracy (Mintzberg, 1983), and self-managing work teams. Because of the generalization, the overview might look as somewhat of a caricature: differences are somewhat 'black & white'.

Table 1.3 Comparison between conventional teams and self-managing work teams

	Traditional / conventional teams	*Self-managing work teams*
• Task domain	• Production tasks only	• 'Whole' process, intact
• Innovation/ improvement	• Focus on goal achievement	• Focus on continuous improvement
• Control	• Supervisor directly controls daily activities	• Team controls daily activities, through group decisions
• Management/ leadership	• Management role: direct/control • Leadership: top down	• Manager: coach/facilitator • Leadership shared with team
• Job design	• Many narrow jobs, performed by individuals	• Process subdivided into team tasks, team fulfils 'whole task'

Basically, the differences displayed in this table result from a radically different view on organisations in general: the design principles underlying both kinds of work settings (Scientific Management / bureaucratic model vs. STSD, respectively) are fundamentally different.

Self-managing work teams in practice

So far, the discussion of self-managing work teams was focused on the theory behind the model. The way in which teams are implemented in practice, sometimes differs from this picture.

Designing self-managing work teams

Though the description provided in the above might seem to indicate that there is one uniform design for self-managing work teams, this is not the case. Important common design principles as proposed by STSD include:

1. A complete team task;
2. The team can fulfil the task as autonomously as possible;
3. Team members' tasks are interdependent;
4. The team is neither too large, nor too small (7-12 members);
5. Team members are multi-skilled;
6. The team has a coordinator;
7. Supportive production systems, control systems, support systems and information systems are in place;
8. Rewards are linked to team performance.

(For a complete overview, see appendix I).

Though the importance of these principles is advocated in theory, in practice, it seems that companies all make their own choices with regard to team design. In a study of eleven Dutch companies, De Leede & Stoker (1996) found that the case study organisations all chose different designs. They could find no evidence for relationships between design of self-managing work teams, and the type of production process, nature of the workflow or characteristics of the organisation

(size, age, etc.). The researchers conclude that design of self-managing work teams is primarily a matter of policy, and as such very dependent on management intentions and possibilities of employees (probably more so than on characteristics of the production process and the work flow). Further support for this conclusion can be found with Peeters & Koppens (1997). In a follow-up survey under 13 companies from the effectiveness study by Joosse et al. (1990), they found that none of the teams fits the ideal picture, as represented by these eight design characteristics. Organisations search for the most adequate solution for their specific situation, which leads to variety in team designs. Factors which play a role include experiences from other companies and external expertise (Peeters & Koppens, 1997), empirical evidence for the importance of each of the design principles is still very limited (Emans et al., 1996).

Implementation of self-managing work teams

Room for autonomy can only be created by building this into the organisational structure as a whole, therefore implementing self-managing teams means re-arranging the entire organisation, to create a context which provides both room and support for self-management (e.g. Pasmore, 1988; Ray & Bronstein, 1995). Research has indicated that a fitting team context is one of the characteristics of effective work groups (Campion et al., 1993; Emans et al., 1996; Sips & Keunen, 1996; De Leede, 1997). The implementation of self-managing work teams brings considerable changes for (see e.g. Sips & Keunen, 1996; Stoker, 1998):

- The organisation as a whole, which becomes more flat as management layers are removed;
- The organisation and division of work, which has to be based on the work flow (among other things this means changes in lay-out of the shop floor and technical changes);
- Management roles: the manager becomes less of a supervisor and controller, and more a coach and facilitator, whose primary task is to support the teams in reaching their goals;
- Support activities: these become integrated in the team process, which changes the organisation of staff departments (Wellins et al., 1991). In a study of self-managing work teams in eleven organisations, De Leede & Stoker (1996) found that implementation of self-management never resulted in the *abolishment* of staff departments. Teams take over routine tasks with regard to support functions such as quality, maintenance and logistics, while staff departments retain responsibility for specialized tasks, and tasks that require an overview over the entire organisation.
- Coordination mechanisms: instead of standardization of processes and supervision, mutual adjustment and standardization of output become important means to coordinate workflows.

Redesigning the entire organisation according to the self-management philosophy is a very radical and time-consuming process. Over the years, a shift can be observed

from a technical, engineering approach to a more learning-oriented, developmental approach to implementation. The implementation of teams is regarded more and more as a learning process, and supported accordingly (e.g. Hoogerwerf, 1998; Van Eijbergen, 1999).

Even though the importance of a fitting organisational context is stressed in the literature, it appears that in practice, companies sometimes also introduce single teams without changing the organisational structure as a whole, for example because they implement pilot teams, or because they implement teams only in part of the organisation. It appears that this makes it more difficult to make such teams successful (e.g. Orsburn & Moran, 2000).

Prevalence of self-managing work teams

Factors such as a diversity in appearance forms of self-managing work teams, differences in degrees of autonomy, and the fact that firms sometimes use self-managing work teams only in parts of the organisation, render it difficult to make a large scale inventory of the amount of self-managing work teams. Little empirical evidence is available (De Leede, 1997; Stoker, 1998). Dutch experts generally estimate that around 300 to 500 firms in The Netherlands work with self-managing work teams. American survey research from 1993 indicated that in 47% of the Fortune 1000 companies at least part of the work force was part of a self-managing work team, while 60% of these firms planned to increase the use of these teams in the next two years (Lawler et al, 1995; Cohen & Ledford, 1994). On the other hand, a recent inventory throughout ten European countries resulted in an estimate of 4% of the companies working with 'true' self-managing work teams (Benders et al., 1999). Much depends on the definition of self-managing work team. Though exact figures are hard to come by, it is safe to assume that self-managing work teams are currently being used on a more widespread basis than a decade ago (Orsburn & Moran, 2000; De Leede, 1997; Stoker, 1998). Originally developed for and applied in manufacturing industry, self-managing work teams are increasingly also applied in service industry (e.g. Benders & Van Amelsvoort, 2000). The latest development is that also not-for-profit organisations, such as schools (e.g. Pelkmans & Smit, 1999) and health care organisations (e.g. Filos, 2001) are exploring the applicability of such teams for their situation.

1.3 Reasons for implementing self-managing work teams

In general, reasons for organisations to implement self-managing work teams can be related to the three aforementioned criteria for organisational performance. First, and foremost: motives related to *the quality of organisation,* such as a need for quality improvement, cost price reduction, increased customer focus, or higher levels of service and greater productivity. The need to increase the *quality of working life* is an argument which plays a role in the background, but which cannot be regarded independently from the need to increase the quality of organisation. The desire to

increase the *quality of working relations* seems to play hardly any role. Below, these reasons are explored more elaborately in section 1.3.1.

Of course, a very important question is whether the expectations with regard to the benefits of self-managing work teams are justified. It is generally accepted that self-managing work teams have positive effects on both business related objectives (such as productivity and quality of products) and on the quality of working life (e.g. Orsburn & Moran, 2000; Van Eijbergen, 1999), but 'hard' empirical evidence is hard to come by. Subsection 1.3.2 discusses specific research that has been undertaken to establish effects of such teams.

1.3.1 Main reasons for implementing self-managing work teams

Self-managing work teams may offer benefits for both organisations and employees, as Wellins et al. state:

> 'As plants, hospitals, service organisations and American Businesses as a whole seek to become more efficient, they cannot overlook the advantages offered by flexible, self-disciplined, multi-skilled work teams. Meanwhile, workers recognize the benefits inherent in the self-directed work environment: an opportunity to participate, to learn different job skills, and to feel like a valuable part of their organisations'
>
> (Wellins, Byham & Wilson, 1991, p. 10)

In this section we review both motives related to the business, and arguments associated with the quality of work. The section is based on evidence from empirical studies as much as possible. (No specific research was found with regard to quality of working relations). At the end of the section, the issue of using self-managing work teams to build a learning organisation is discussed.

Quality of organisation

At the request of the Dutch Social and Economic Council (COB/ SER) Joosse et al. (1990) carried out a study into the use of self-managing work teams in The Netherlands. It was found that for those thirteen companies participating in the study, the reasons could primarily be traced to demands placed by the external environment, for example a need to reduce cost price, improve quality, and increase customer orientation. A few companies also mentioned internal factors: personnel problems (such as high absenteeism rates, a too large span of control, an inadequate style of management) and problems associated with the workflow (such as the need to reduce internal stocks, shorten production cycle times, and to increase flexibility). The most important of these internal factors were associated with personnel issues, such as the desire to lower employee absenteeism rates.

Research by De Leede & Stoker (1996) among eleven Dutch companies showed similar results. They also found that economical factors were the main motive for

organisations to implement self-managing work teams. Improving quality of the work was an issue of secondary importance (only mentioned by five companies, as an objective of minor importance).

International publications (mainly from the US) point in the same direction. Especially the research by Wellins et al. (1991) is worth mentioning here. Their survey under 500 companies revealed that the main reasons for implementing self-managing work teams were related to quality (38% of respondents), productivity (22%) and the need to reduce operating costs (17%).

In general, it can be stated that the major motives for organisations to implement self-managing work teams seem to be a need for quality improvement, cost price reduction, increased customer orientation and improved service and an increased productivity. A more complete overview is provided in table 1.4. This list is not comprehensive; it serves mainly to provide a general overview. The way in which self-managing work teams are supposed to help companies reach these objectives is also not extensively discussed here (For an overview: see Kuipers & van Amelsvoort, 1990; De Sitter, 1994).

This situation differs sharply from that from the 1960's, where humanization of work and industrial democracy were primary reasons to experiment with increased employee autonomy. Nowadays, firms that increase self-management appear to be mainly driven by economic motives (De Leede & Stoker, 1996; Sips & Keunen, 1996). Peeters & Koppens locate the start of this turnaround in the 1980's, with the economical recession. Some companies tried to turn the tide by experimenting with new organisation concepts, such as self-managing work teams, in an effort to increase customer orientation, improve product quality, lower cost prize and lower employee absenteeism rates (Peeters & Koppens, 1997; Orsburn & Moran, 2000).

Table 1.4 Motives for implementing self-managing work teams: overview

Motives	*Reported by**						
	1	*2*	*3*	*4*	*5*	*6*	*7*
• Quality improvement	•		•	•	•	•	•
• Cost price reduction		•	•	•	•	•	
• Increasing customer orientation, improving service					•	•	•
• Increasing productivity rates	•		•	•			
• Shortening delivery times		•			•		
• Increasing flexibility, responding faster to technological change			•				•
• Improving efficiency, reduce operating costs		•		•			
• Lower absenteeism rates					•	•	
• Improve market position		•					
• Organisation development		•					
• Making better use of human resources			•				

** 1 = Cohen & Ledford, 1994; 2 = De Leede & Stoker, 1996; 3 = De Sitter, 1989; 4 = Fousert, 1996; 5 = Joosse, 1990; 6 = Peeters & Koppens, 1997; 7 = Wellins et al., 1991*

Quality of working life

Besides organisational advantages, working in self-managing work teams has benefits for employees as well. A survey of 500 US business by Wellins et al (1991) showed that 12% of the companies recognised this, they aimed to increase job satisfaction by means of self-managing work teams. Such teams are considered to be more pleasant work environments.

Because workers generally appreciate a certain degree of autonomy, this is also relevant from the viewpoint of attracting staff. In general, it appears that employees welcome the increase in autonomy, responsibility and empowerment that self-directed teams provide (Wellins et al., 1991; De Leede, 1997). Asked whether employees 'want the freedom to decide how to do your work', 77% answered 'yes', in a 1988 survey under American workers ('What workers want', cited in Wellins et al, 1991). Organisations that offer employees empowerment, can be expected to be better able to attract and retain the best people than those who operate on the basis of top-down processes and little employee autonomy (Wellins et al., 1991).

Increasing the quality of work is not an objective in itself with self-managing work teams, but more an aspect inherent to this organisational model. STSD theory stresses bottom-line economic benefits for companies of increasing employees' possibility to regulate and influence the immediate work environment. Increasing employee autonomy is not considered as 'nice to do', but is seen as a necessity. And quality of work is regarded as an integral aspect of organisational quality[viii].

Self-managing work teams as part of a 'learning strategy'

Though the objectives as described in the previous paragraphs all serve to explain the specific benefits organisations seek to realise by implementing self managing work teams, by themselves they do not explain the current popularity of the concept of self-managing work teams. As mentioned in section 1.1, experts from the Socio-Technical Systems Design - school have been advocating the use of these teams since the 1940's. But though the concept has been in the literature for almost half a century, it has never gained widespread acceptance, until now (Guzzo & Dickson, 1996; Lawler, 1986; Stoker, 1998). Next to the more 'pragmatic' reasons for implementing self-managing work teams that were discussed in the above, there is another underlying motive for the present interest in this organisation concept.

It appears that one of the main reasons why self-managing work teams are currently being implemented on a wide scale is that they are considered to be an essential building block for developing learning organisations (Senge, 1990a; Orsburn & Moran, 2000). Self-managing work teams are believed to provide a basis for individual learning and contribute to improvement and innovation. They are increasingly used as part of a 'learning strategy' (Onstenk, 1996). Since most of the systematic studies into objectives of self-managing work teams date from a few years back, this motive does not appear as clearly from the overview above. It does recur, however, in current books, articles and conferences on the topic (e.g. De Leede, 1997; Onstenk, 1997; Homan, 2001; Orsburn & Moran, 2000).

1.3.2 Results of self-managing work teams

Despite the growing prevalence of self-managing work teams, empirical evidence for their effectiveness is limited[ix] (Cohen & Ledford, 1994; De Leede, 1997; Stoker, 1998). Much of it comes in the form of anecdotes or descriptive case studies, there are only few well-designed studies that evaluate the impact of self-managing work teams (Banker et al., 1996; Goodman et al., 1990; Vink, et al., 1996). Goodman et al. (1990) argue that this is typical for research in the field of organisational design in general. A comprehensive review of organisational design literature performed by Macy et al. documented a number of 835 empirical studies. Only six percent of these met the requirements the researchers adhered to for including studies in their meta-analysis: such as the use of longitudinal empirical data, necessary sample sizes, means and significance tests (in Goodman et al., 1990).

A general conclusion with regard to the research into effectiveness of self-managing work teams is that the more rigorous the research design (e.g. longitudinal design, quasi-experiments), the more difficult it appears to prove any clear-cut, significant effects (Cohen & Ledford, 1994; Goodman et al., 1990).

For the exploration of self-managing work team effectiveness, the following research reviews were studied:

- Cohen & Ledford (1994): literature review and quasi-experiment;
- Dunphy & Bryant (1996): literature/research review and case research;
- Goodman, Devadas & Hughson (1990): review of three micro-studies and meta-analysis of three longitudinal studies and three meta-analyses;
- Guzzo & Dickson (1996): meta-analysis of four effectiveness studies and a previous meta-analysis;
- Pasmore (1988): comprehensive review of four reviews.

The overlap between these reviews is minimal. Next to these reviews and meta-analyses, one single study was used, namely Joosse et al. (1990), because this is an influential Dutch study. It used a multiple-case study design, in which 13 organisations participated. The replication of this study by Peeters & Koppens (1997) was also included.

Productivity of self-managing work teams: quality of organisation

In general, empirical data appear to suggest that self-managing work teams have a (modest) impact on *productivity* (Cohen & Ledford, 1994; Goodman et al., 1990; Joosse et al., 1990; Pasmore, 1988), probably as a result of increased flexibility of team members and of improvements in work methods which teams implement once carrying the responsibility for the process, and having the possibility to realize improvements (Lawler, 1986).

There is also some evidence to support the premise that self-managing teams have positive effects on *product and service quality* (Cohen & Ledford, 1994; Dunphy & Bryant, 1996; Peeters & Koppens, 1997). Lawler (1986) contributes this effect to the same psychological phenomenon that appears in situations of individual job enrichment: when people are held accountable and responsible for the production of a product, they want it to be of good quality. A second reason why self-managing work teams generally achieve a higher quality may be that the team situation offers the possibility to solve problems collectively, which often leads to more, and better, ideas on how to solve a particular (quality-related) issue. Whether productivity and quality improvements outweigh the costs of change is most unclear, since cost-benefit analyses have hardly been performed (Goodman et al., 1990).

A change in attitude has been an important subject in the effectiveness research. In general, there is not much evidence for changes in general commitment to organisational goals (Goodman et al, 1990), but changes in beliefs and attitudes with regard to specific areas such as responsibility, control and job diversity have been reported (Goodman et al., 1990; Dunphy & Bryant, 1996; Pasmore, 1988). Joosse et al (1990) did not directly measure attitude changes but did report decreasing numbers of complaints, lowered absenteeism rates, fewer losses of tools and materials and greater technical flexibility, which they consider to be indicators of greater motivation, commitment, responsibility, and result-orientation.

Next to effects on the company level, working in self-managing work teams also appears to have some positive effects on the *work place level*. For instance, in the study of Joosse (1990) managers reported to experience many benefits of working with self-managing work teams in the day-to-day operations: employees did not necessarily work harder, but they did seem to work 'smarter' and propose solutions instead of merely reporting problems. Managers welcomed these changes, since it enabled them to dedicate more time to managerial, and long term issues.

It is also often claimed that self-managing work teams are better capable of *innovation*. Peeters & Koppens (1997) found (in a study of 13 organisations) that the innovative function of teams remains limited to process improvements. As a result of a better overview of the process and increased commitment, employees look for ways to improve the work process. However, real innovation of processes and products usually falls outside the team's scope. Likewise, De Leede (1997) found that teams contribute to improvements and innovations mainly by making observations and suggestions in this regard, based on their hands-on experience in the team. In a sense, they are the 'eyes and ears' of the people who actually develop improvements and innovations (e.g. R&D).

Employee well-being in self-managing work teams: quality of work

There is empirical evidence for mixed effects of self-managing work teams on *improvements in employee satisfaction and quality of working life (QWL) indicators* (Cohen & Ledford, 1994). In their Dutch study, Joosse et al. (1990) provide some examples of positive changes: in teams that they studied, jobs became more logical and coherent, independence increased, and the possibilities for interaction with co-workers grew. On the downside they found that team members also experienced that their work became psychologically more demanding and in some cases work pressure increased, though rewards remained at the same level (Joosse, 1990).

Likewise, there appear to be no clear trends in the effects of self-managing teams on QWL indicators such as *absenteeism or employee turnover* (Goodman et al., 1990). Some studies report *higher* levels of absenteeism and turnover among members of self-managing work teams while others report *decreases* in absenteeism and turnover (see Guzzo & Dickson, 1996). This sheds some doubts on the assumption that the higher quality of working life that self-managing teams offer, will lead to a decrease of employee absenteeism. In fact, it appears there is no consistent empirical proof for this assumption.

In a follow-up of an earlier study into team effectiveness by Joosse et al., Peeters & Koppens (1997) found that the quality of work does not always improve as a result of the implementation of self-managing work teams. They found another reason: the increase in capacity of team members (e.g. by focused training programmes) does not always keep up with the delegation of responsibilities to the teams. This sometimes leads to a situation in which not all available capacities are used: there is a

discrepancy between what employees are able to do, and the tasks they perform on a regular basis. This has a negative effect on the QWL, since employees expect to be able to use their new competences: expectations of their job have risen. When these expectations are not met, disappointment negatively affects job satisfaction.

Individual and organisational learning: self-managing work teams in a learning strategy

Finally, as mentioned in section 1.2.1, self-managing work teams are nowadays not only implemented because of the abovementioned motives, but also as a strategy for fostering the development of a learning organisation by supporting organisational learning and fostering learning on an individual level (Onstenk, 1996). Only little targeted empirical evidence was found regarding results of self-managing work teams in these respects.

Research by Onstenk (1993, 1996, 1997) indicates that self-managing work teams increase opportunities for individual learning and competence development. Jobs in such teams are 'rich' in learning opportunities as a result of task enrichment, task enlargement and a considerable amount of latitude and employee responsibility (empowerment). Moreover, working in teams offers more opportunities for working together with colleagues, and thus for learning with, and from, these other team members. However, though these teams form a conducive learning environment, learning in the work place usually does not take place 'all by itself', as Onstenk points out:

> 'On the contrary, there are indications that in the modern workplace more traditional forms of learning on-the-job (such as sitting next to Nelly: watching an experienced worker and copying his or her behaviour under his/her supervision) are becoming increasingly difficult to achieve. Increased production pressure and risks of damage and the complex, abstract and opaque nature of production processes which result from automation and an increase of scale make it more difficult for employees to learn in the workplace itself.'
>
> (Onstenk, 1995, p. 76)

Peeters & Koppens (1997) and De Leede (1997) found that self-managing work teams can indeed contribute to improvements and innovation of products and processes, which can be considered an indication that they help to promote organisational learning.

The next chapter further explores the possibilities to use self-managing work teams in a 'learning strategy'.

2 Self-managing work teams and the learning organisation

A growing number of organisations is currently experimenting with, or implementing self-managing work teams, with the explicit aim to enhance individual and organisational learning. They are implementing self-managing work teams to promote the development of a learning organisation. In other words, they are using self-managing work teams as an element in their 'learning strategy'. Since this background formed the main perspective for this thesis, which focuses on self-managing teams as an environment for individual learning, it is important to address this issue in more detail.

Section 2.1 explores reasons why organisations are looking to enhance their capacity for learning, and why the concept of the learning organisation became popular. Section 2.2 lists some of the most important barriers to learning, and section 2.3 reflects on the question whether it is reasonable to assume that self-managing work teams may help companies to overcome such barriers.

2.1 The importance of organisational learning

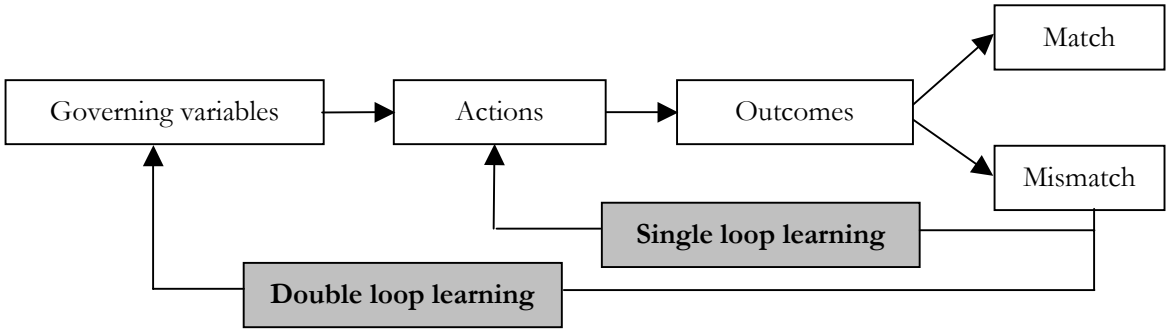
Current economic, technological and social developments place increasing demands on the organisational capacity for learning. As a result, companies start looking for strategies to enhance organisational learning. Self-managing work teams are considered a promising tool in this respect (Hong, 1999; Orsburn & Moran, 2000). This section describes this development, but starts with a more general description of the nature of organisational learning.

Organisational learning

Organisational learning is a process whereby organisations realise improvements or innovations in their processes, products or services, in order to solve problems or to respond to changing circumstances. In a sense, organisational learning is a metaphor: the organisation is considered as a 'learner'. There are several classifications of organisational learning processes (e.g. Fiol & Lyles, 1985; Bomers, 1990; Pascale, 1990; Swieringa & Wierdsma, 1990), practically all of which are based on the typology of Argyris & Schön (1978). This typology distinguishes between

two basic types of organisational learning: single loop and double loop learning. Figure 2.1 depicts both processes.

Figure 2.1 Single loop and double loop learning (from: Argyris, 1992)



An organisation's governing variables are, for example, its mission statement, and its (tacitly held) assumptions on the best way in which to achieve the organisational goals. Organisations undertake actions based on these governing variables. These actions have certain consequences. Here, the figure distinguishes between two possibilities. On the one hand, the results can be as expected, in which case there is a match between the intended outcome and the actual outcome. On the other hand, it is possible that the results of an action are not what the organisation had expected, in which case there is a mismatch between expectations and outcome.

In the theory of Argyris and Schön (1978) a mismatch is the starting point for an organisational learning process. The organisation has to find out how to change its actions in order to achieve the intended outcome[i].

According to Argyris & Schön, an organisational learning process can occur at two levels. First the level of single loop learning: this means the organisation makes small adjustments in its actions, but doesn't radically change its strategy or its products or services. A renewed version of an existing product, or an intensification of a marketing strategy are good examples of outcomes of single loop learning processes. However, making small adjustments on the activity level is not always enough to solve problems. Sometimes the reason for the mismatch is located at a deeper level: the organisation's governing variables. Then a double loop learning process is required in order to reach the intended outcome. In the case of organisational learning the outcome of a double loop learning process could be, for example, the introduction of a completely new product, or introducing an existing product in a totally new market.

Double loop learning processes thus have more far-reaching consequences than single loop learning processes do. To illustrate this point, single loop learning is often compared to keeping a ship on course by making small adjustments (Morgan, 1997), whereas double loop learning resembles the process of changing a ship's course. Single loop learning leads to incremental changes in organisational

functioning, whereas double loop learning results in renewal or innovation of existing practices, services or products. Therefore, both kinds of learning processes complement each other (Imai, 1986).

Next to the processes of single loop and double loop learning Argyris & Schön (1978) have determined a third level of organisational learning, which they labelled 'deutero-learning'. This refers to the capacity of organisations of learning how to carry out, and how to optimise, its (single and double loop) learning processes. In other words, it refers to 'learning how to learn' (Thijssen, 1988; Senge, 1990a; Swieringa and Wierdsma, 1990).

Importance of organisational learning

So, the idea that organisations can learn is not new. But even though theories on organisational learning were already formulated in the 1970s, they only gained widespread attention in the beginning of the 1990s. The interest in organisational learning, and ways in which this can be supported, reflects changes in the demands placed by the organisational environment. Though the learning organisation is still not a relevant concept for all companies, a growing number of organisations find that the environment places a greater demand on their capacity for learning, as a result of economic, technological and social developments.
First, the environment of many organisations is becoming increasingly complex: technological changes are occurring at an ever higher rate, and are less predictable than they used to be, and competition takes place on a more international -if not global- scale. Moreover, there is a growing recognition of the shift towards a knowledge economy, in which knowledge is becoming the driving force behind production and economic growth (OECD, 1996; Homan, 2001; Kessels & Keursten, 2001). The scale of change becomes clear when reviewing the performance criteria for success in the market. In a review of the changing nature of environmental demands placed on companies in the last decades, Bolwijn & Kumpe (1989) conclude that current performance criteria for organisations include: efficiency, quality, flexibility and innovation. The latter is the most recently added criterion. In many markets nowadays, customers not only demand high quality products or services at a reasonable prize (which requires efficiency and quality management), extensive choice and short delivery times (which presupposes flexibility) but also value uniqueness of products or services (which makes innovation necessary).

Forces such as an increasing competition, evolution of global markets (and thus increasing global competition), an impressive speed of technological changes, and the importance of knowledge, place great demands on organisations' flexibility and capacity for innovation. Companies need to find ways to quickly create and acquire new knowledge and use these new insights to improve or renew their organisational processes, products and services. In other words, they have to improve *their capacity for learning* (e.g. Rothwell, 1996; Bolhuis & Simons, 1999; Kessels, 2001a).

Interesting to note is that, next to economic and technological changes, societal developments also appear to affect organisations. In general, the level of education has increased over the years. Research from the US has shown that in 1964, 45% of the employees held a high school diploma. By 1984 this number had increased to 60% of the overall work force. Important to note is that for the group of twenty-five to twenty-nine year old employees this figure was much higher, namely 86% (Lawler, 1986). There is reason to believe that the composition of the Dutch labour force shares similar characteristics (Van Hooft et al., 1996; De Leede, 1997). As a consequence of this increased level of education (Lawler, 1986; De Leede, 1997):

- People expect to be able to use the knowledge and education obtained in school and often view their education as an investment for obtaining a better job;
- Employees are less willing to take orders, simply because they are given by somebody in authority. Authority is derived more from expertise than from position. In addition, there is evidence that managers are becoming less willing to give orders.
- People would like to have considerable influence on work methods, and schedules

Moreover, with the growing importance attached to knowledge and a well-educated workforce for the economy, creating opportunities for lifelong learning is an important issue on a societal level also (OECD, 2001a; OECD, 2001b). Companies are increasingly seen as partners in realising a 'learning society', because of their contribution to fostering individual learning (Brandsma, 1997; Gass, 1996). All in all, there is growing need for companies to create opportunities for learning as part of work.

Learning organisation: perspective, rather than a model

Concepts such as the learning organisation (Senge, 1990a), the intelligent organisation (Pinchot & Pinchot, 1994; Quinn, 1994), the knowledge-creating company (Nonaka & Takeuchi, 1995), knowledge management (Drucker, 1995; Leonard-Barton, 1995; Weggeman, 2000) and knowledge productivity (Kessels, 1995) all reflect the strategic relevance attached to knowledge and learning.

By nature of its name, the idea of the learning organisation often invokes the idea of a design, or an organisational model (like Mintzbergs' ideal types). The concept of the learning organisation, however, is primarily a new *perspective* on organisations, and not so much an organisational blueprint that can be implemented as such[ii]. Basically, the idea of the learning organisation is a perspective in which the focus is on the *learning process* of the organisation rather than its primary process. The entire organisational configuration is (re)examined through the lens of the learning process.

To an increasing degree, organisations find that structures, procedures and coordination mechanisms that were established in order to facilitate an efficient flow of the primary process, actually hinder the learning process (see also: Hong,

1999). A functional structure, for instance, is very efficient, because of the high degree of routine, but at the same time, it can block innovation. Organisations therefore increasingly start looking for designs that facilitate organisational learning.

Of course, demands for organisational learning vary widely across companies. Some operate in rather stable markets, and others can influence their environment in such a way that they are less vulnerable to changing market demands (by building alliances with other companies, by operating in new markets etc.) (Molleman & Van der Zwaan, 1994). But a growing number of organisations find themselves facing a turbulent environment, where change is rule, rather than exception.

Characteristic for companies that adopt the concept of the learning organisation is that they are aware of the type of *demands* for organisational learning, placed by their environment, and subsequently make changes in the organisational configuration, in order to increase their capacity for organisational learning. Such firms can *de facto* already be considered as learning organisations. That is: companies that deliberately strive to increase their capacity for realising improvements or innovations in their products, processes or services, based on new insights (Bolhuis & Simons, 1999; Kessels, 2001a; Tjepkema et al., 2002). Or in other words: companies that reflect on and enhance their capacity for single-loop and double-loop learning.

So, building a learning organisation is not so much an issue of implementing a new design, work process or structure (like a blueprint), rather: it can be regarded as a gradual, on-going development of all facets of the organisation (see also Boonstra, 2000) in such a way that learning is facilitated. The company consciously adopts 'learning strategies' in order to develop its capacity for learning (…in order to reach its strategic goals).

Typically, these strategies also include efforts to facilitate learning on the individual level. In a sense employees embody an organisation's capacity for learning (Kim, 1993; Hong, 1999), since they embody the capacity to (Honold, 1991):

- Acquire or create new knowledge for the organisation (e.g. by learning from daily work experiences, studying new technological advancements or learning about work practices used by other companies);
- Disseminate this knowledge to others within the team or the organisation;
- Apply the new knowledge in improved or renewed work practices, products and services.

Though much of the existing literature on the learning organisation focuses on individuals as 'agents' of learning in this way, upcoming views focus on groups of workers as 'learning entities'. In this perspective, knowledge is created by the collective, and not by individual workers and then passed on to the collective (Ortenblad, 2001). In both perspectives, however, organisations depend on individual and collective learning on the organisational level. This notion affects the view of the added value that employees have for an organisation. Metaphorically speaking: the idea of the employee as a 'hired hand' makes way for the idea of the

'employee as a hired head'. Organisations need for their employees to learn, in the sense of acquiring new knowledge and skills and using these to improve existing work practices, products or services, or to jumpstart innovation. Research indicates that companies increasingly regard employee learning as an important link in realising strategic goals such as increased customer focus, flexibility and on-going improvements and innovation (Tjepkema et al., 2002). Learning, therefore, is considered as part of everyday work, and supporting work-related learning is seen as a very important issue in building a learning organisation (Marsick & Watkins, 1993; Bolhuis & Simons, 1999).

Looking for new 'architectures'

The need for organisational learning stimulates a search for organisational architectures that facilitate individual and organisational learning. The bureaucratic model was originally developed to meet with efficiency demands. As was mentioned before, environmental demands have shifted and expanded dramatically since then. But even though much has changed in the way companies are being structured and managed since the early days of Scientific Management, traces of the classic ideas of work organisation can still be recognized in many firms, in the form of the line-staff structure and assembly-line production systems (Lawler et al., 1995).

It appears that the felt need for organisational learning now acts as a driving force for changing organisational designs. Several authors on learning organisations contend that bureaucratic organisations: do not tap the creativity and knowledge from people in the operating core (Garratt, 1988) and are in general not effective when it comes to organisational learning (Senge, 1993; Hong, 1999).

In their efforts to build learning organisations, companies not only invest in creating an organisational culture that provides room for employees to experiment, learn from those experiments and use these learning experiences to improve the quality of processes, products and services (e.g. Poell, 1998; Rothwell, 1996; Horwitz, 1999). But they are also looking for new architectures to enhance organisational capacity for learning (Ayas, 1997; Nadler, 1992b).

It is assumed that a structure which facilitates learning has at least these three characteristics (Ayas, 1997):

- focus on work processes (to increase the overview over the work process);
- self-direction on the operational levels (to provide room for experimenting and implementing improvements);
- teamwork (to increase opportunities for collective learning).

All three of these are combined in the concept of self-managing work teams, which is therefore considered as a promising tool in building learning organisations.

However, as was concluded in chapter 1, not much specific research was found to directly support the assumption that self-managing work teams can indeed be

effectively used as a 'learning strategy'. Interestingly enough, it seems that though the scientific basis for their contribution to building a learning organisation is still very limited, the theoretical reasoning underlying the concept apparently appears sound enough (and the economical pressure strong enough) for a growing number companies to experiment with self-managing work teams. It appears that, much the same as the adoption of the learning organisation concept, for many companies implementing self-managing work teams as a learning strategy is basically an 'act of faith', signifying a strong belief in the concept (see also Stewart & Sambrook, 2002).

This chapter is an attempt to further clarify why we think self-managing work teams may be an essential instrument in building learning organisations, by further studying the most common barriers to learning (in the next section), and analysing whether self-managing work teams may provide a tool to overcome such barriers.

2.2 Common barriers to organisational learning

So, with the pressure on organisational capacity for learning, the bureaucratic model is increasingly re-evaluated for its potential to ensure an effective and efficient flow of the process of organisational learning. In their search for ways to realise on-going innovation and improvement, organisations usually are confronted with several obstacles to learning, woven into the fabric of the organisation. For instance, when communication in the company is flawed, individual employees may learn (though learning from others may already be more difficult to achieve) but it is difficult to realise collective learning. Swieringa & Wierdsma provide an example:

> 'Let's say that, during a routine check, a quality manager discovers that a certain team has a consistent higher failure rate than other teams. If he would decide to follow this team more attentively, and not tell his supervisor; or if he would decide to tell him, but the manager doesn't listen, than the quality manager has learned, but not the organisation.'
>
> (Swieringa & Wierdsma, 1990, p. 37)

Many of the most common barriers to learning are part of the organisational '*software*': dominant thought and communication patterns within the organisation (Pascale, 1990; Ross, 1992; Senge, 1990a). Others are directly linked to the organisational design: the '*hardware*' (Senge, 1990a; Swieringa & Wierdsma, 1990). It is important to realise that an organisation's 'hardware' to a large degree influences the 'software': in other words, communication and thought patterns are largely influenced by the way in which the company is designed. Therefore, it is contended that changing the organisational structure may help to overcome several barriers. However, the picture is not complete when considering only system-related barriers. Next to the barriers that are inherent to the organisational configuration as a whole, it is also important to take into account individual barriers to learning.

This section provides a description of the most common learning barriers[iii], divided into three categories (partly based on Gieskes, 2001):

1. Individual barriers to learning
2. Learning barriers, linked to the organisational design
3. Learning barriers, linked to the communication and culture

The overview presented here is based on a literature review, but a recent study by Gieskes (2001) has yielded renewed empirical evidence for most of these issues.

Individual barriers to learning

As mentioned above, an organisation as such can only learn by virtue of learning by its members. Individual learning is therefore a necessary (though in itself insufficient) element in learning on the organisational level (Honold, 1991; Hong, 1999; Kim, 1993). Though the idea that people possess a natural drive for learning seems widely accepted, it is also generally acknowledged that people 'unlearn' certain competences that are very important for learning, such as spontaneity and a drive for experimentation (Senge, 1990a). During the course of their lives, most people develop some internal obstacles to learning, such as a fear of making mistakes, aversion of experimentation, or an inability to ask for feedback and/or learn from it. Egberts (1992) and Argyris (1991) provide the following overview:

- Observational barriers, preventing a person from seeing the true nature of a problem and/or from finding the right solutions. Examples include: a tendency to define problems too narrowly and too rigorously; difficulties in separating cause and effect; a tendency to see only those things one wants or expects to see, disregarding the rest or not being able to examine the problem from multiple perspectives.
- Cultural barriers: culturally defined norms and values that negatively influence or impede the problem solving process, such as: the assumption that experts are always 'right'; the desire to conform to rules; an inability to question methods, processes, people; overly stressing competition or – by contrast - overly stressing co-operation.
- Emotional barriers: individual insecurities that impede the problem solving and learning process. For example: a fear of taking risks; fear of making mistakes; fear of looking 'stupid'; lack of patience or an inability to tolerate a certain amount of chaos and ambiguity.
- Intellectual barriers, for instance a lack of language skills or an inability to handle complex problems.

Also, it is found that people tend to equate learning to 'training' or other formal learning forms. This may hinder them in fully using the opportunities for informal learning, and for building skills in this area (Simons, 1999a).

The degree to which these individual learning barriers influence people's behaviour is greatly determined by the environment. The influence of personal obstacles to learning can therefore be either enhanced or reduced by the organisational environment. For example, sometimes people are hesitant to ask questions at work,

but they are not afraid to do so during a French course they take in their private time. If the organisation is able to create an environment favourable to learning, in which people are encouraged to learn and receive support in building skills in learning, the influence of any personal barriers to learning will be greatly reduced[iv]. Creating a positive learning environment and stimulating individual learning is therefore an important element in any strategy for building a learning organisation (Pearn et al, 1995). Basically, this is also the rationale behind creating a positive learning environment within self-managing teams, as is the focus of this PhD-thesis.

Design and structure related barriers to learning

This section focuses on learning obstacles that are related to the organisation's overall design. As discussed before, the basic bureaucratic model is still a very dominant influence in companies today. Over the course of time, the original model has been amended to increase flexibility (e.g. by just-in-time methods and new product development strategies which reduce time-to-market of new products), to stimulate innovation (by means of systematic innovation programmes), to enhance process and product quality (by means of total quality management programmes), to reduce operating costs (by cutting the number of employees, investments in new technology and use of IC-T), and improve the quality of working life[v] (though measures such as job enlargement, team building etc.) (see e.g. Fisher, 1993; Lawler, 1986; Van Hooft et al, 1996).

The ideas on how to best structure and manage organisations have changed considerably throughout the years. The closed systems approach has been replaced by the view of organisations as open, natural systems, and the focus on production is complemented by a focus on strategy (Scott, 1987). And the focus on procedures and rules has been complemented by an eye for the 'soft' side of organisations: culture, style of management and communication (see e.g. Peters & Waterman, 1982). These changes in views of organisation are not elaborately discussed here[vi].
A survey among Fortune 1000 companies in the US revealed an increasing use of new management approaches, and concluded that:

> 'The shape of organisations has changed during the last decade. (..) There is a slow but steady growth in practices that reshape the organisation to focus more on the performance capabilities of the technical core and less on creating burdensome control structures and hierarchies.'
>
> (Lawler et al., 1995, p. 145)

However, the study's results also indicated that dominant management practices have been and are firmly rooted in the traditional bureaucratic model of organisation:

> 'So far the traditional bureaucratic approach has at least partially withstood the demands of a much more difficult business environment,

> the changing nature of the work force and a host of other conditions that threaten to make it an endangered species.'
>
> (Lawler et al., 1995, p. 146)

So, bureaucratic principles still greatly influence organisational designs and managerial practices today. And with good reason. The bureaucratic model of organisations has served, and still serves, very well for many organisations, especially when it comes to realising high productivity levels and cost effectiveness, both of which are still essential factors in realising business success (e.g. Lawler, 1986, Miller & Friesen, 1984). Secondly, organisations do not tend to change their existing configuration drastically, since the costs of finding a new stable configuration are often quite high (Miller & Friesen, 1984). Nonetheless, it appears that some of the barriers to learning that companies experience nowadays can be traced back – directly or indirectly - to basic principles from the bureaucratic model.

The overview below lists some of the most common barriers to learning, that can be associated with organisational design issues.

1. Organisational design founded on assumption of a stable environment

Probably the most profound source of learning barriers is that, even though many companies nowadays operate in a highly turbulent environment, the organisation design is not always based on this assumption. A strict separation of regulatory tasks (to be performed by management) and transformational tasks (to be performed by the operating core), also referred to as the splitting of 'thinking' and 'acting' is very helpful to increase efficiency, but makes it difficult to respond flexibly to any changes (Pascale, 1991; Senge, 1990a; Swieringa & Wierdsma, 1990), and is therefore subject to re-evaluation:

> 'In an increasingly dynamic, interdependent, and unpredictable world, it is simply no longer possible for anyone to figure it out at the top, the old model 'the top thinks, the local acts' must now give way to integrating thinking and acting at all levels'
>
> (Senge, 1990b, p. 7)

2. Strict demarcation of functions and departments

A strict demarcation of responsibilities and activities between functions or organisational units in combination with a functional organisation of work (instead of a process organisation) can also hinder learning (Gieskes, 2001). Whenever the borders between organisational departments are held onto very strictly, it may cause individual employees to lose sight of the company, and its work process, as a whole. They do not know how their function is related to other parts of the work process and as a result their sense of responsibility is predominantly directed at their own function or department (Senge, 1990a). Consequently, workers sometimes take decisions that are beneficial for their own department, but at the same time harm the organisation as a whole. In practice, people speak of an 'island-culture' to

describe this phenomenon. They complain that other departments 'drop their problems over the wall', leaving others to solve them. People see that in this way, cross-departmental problems remain unsolved, but they find it difficult to break this pattern. Argyris provides the example of 'budget games': departments trying to acquire a budget or stretch their existing budget in order to realise their specific targets, thereby inadvertently harming the organisation as a whole because the available resources are not divided according to company strategy (Argyris, 1990). Usually the underlying intention is not bad, employees do not try to 'sabotage' the organisation deliberately. On the contrary, they try to act in the company's best interest and may actually be quite committed. But their understanding of, and commitment to company goals is less clear than that of their own department's objectives. Also, their commitment to the own department may be greater than their commitment to the company as a whole. In a more general sense, a high degree of separation within the company may prevent people from working together on problems or improvements that exceed department or unit borders. Learning is limited to the department or unit only (see also Mastenbroek, 1988; Pascale, 1990; Swieringa & Wierdsma, 1990).

3. The difficulties of management teams

A problem related to the previous one, is the role of management teams. Most organisational problems are related to more than one department or unit. For that reason, the management team (MT) usually has members from different organisational units, so that general problems can be dealt with. However, these teams are not always capable of adequately dealing with such issues. For several psychological, and group related reasons, solutions are sometimes based on political compromise, instead of an objective analysis of pros and cons for different alternative solutions (Argyris, 1990; Senge, 1990a).

The biggest danger of a management team that is not very good at solving 'general' problems is not so much that such issues remain unsolved, but the fact that these issues are assumed to be resolved. Argyris refers to this phenomenon as the 'myth of management teams': the organisation thinks that it has designed a solution to deal with issues that transcend the level of the individual division, but in fact is has not. This might lead to frustration on the shop floor level: employees and lower level managers observe problems they cannot solve themselves, because they are beyond their scope. They report them to the management team, only to find out that these issues are still not solved. Or, they find the proposed solution to be inadequate.

4. 'Hands on-management'

Learning can be stifled if the dominant management style is one of 'hands on-management': hierarchical, depending on procedures and supervision as coordination mechanisms. In such a management style managers deal with decisions on the operational, instead of (only) issues on the tactical or strategic level in the organisation. Hands-on management makes it difficult for employees to learn from

experience, since management prescribes much of the work process and solves most of the problems. Also, it reduces the possibilities of employees to translate their individual learning experiences to organisational learning by realising improvements. They have little room for making improvements, if management takes decisions in this area[vii] (Garratt, 1988).

5. The difficulty of learning from experience

In those cases where the work process is segmented into small individual tasks, that are divided over different departments, it becomes more difficult to learn from experience. The overview of the entire work process is lost, and consequences of specific actions are often only felt in other parts of the organisation. This makes it hard to learn from experience. People do not receive feedback on their actions and cannot assess their effectiveness (Gieskes, 2001; Senge, 1990a; Swieringa & Wierdsma, 1990). Of course, learning from experience remains difficult, also in the case of a process oriented organisation, for example because of the delay between actions and results, and the many intervening factors. Therefore, Senge calls it a fundamental learning dilemma for organisations. He also contends, however, that the organisational design partly determines the severity of this dilemma (Senge, 1990a).

6. Lack of resources

Finally, a lack of resources, such as time, people and money, can also hinder learning (Gieskes, 2001). A high work pressure reduces the opportunities for reflection and experimentation. Organisations need some 'slack' in order to facilitate learning from experience and knowledge sharing (Easterby-Smith, 1990).

Communication en culture-related barriers to organisational learning

The second category of obstacles hindering organisational learning is not related so directly to the organisational structure, but more to the dominant thought and communication patterns within the organisation.

1. The power of past behaviour

Just as for an individual, it is difficult for organisations to 'unlearn' past behaviour (Den Hertog, 1992; Easterby-Smith, 1990; Hedberg, 1981; Pascale, 1990; Swieringa & Wierdsma, 1990). It is fairly common for experiences from the past to be idealised (Garratt, 1988), whereas new ideas are stifled by what Argyris (1990) labelled as 'idea killers'. Some examples are remarks such as 'that just isn't the way we operate', 'never change a winning team' or 'don't fix anything that isn't broken'. Especially organisations that have been successful in the past suffer from this type of organisational inertia. They do not feel a need to change their practices, because these have worked for them in the past. Maintaining the status quo is both more safe and more comfortable, and people are not motivated to break it (Pascale, 1990).

A culture that does not support or promote improvements and change can seriously stifle learning processes (Gieskes, 2001).

2. Failure to recognize slow change

Slow changes often pose the biggest threat for companies, because they happen outside their field of vision (Senge, 1990a). In general, companies are strongly focused on incidents: these are easier to discern, and their effect is more direct. It is more difficult to identify slow and gradual changes. In this respect, Senge compares organisations to frogs, he presents the metaphor of the 'boiling frog'. A frog in a pan of water that is slowly being heated, does not notice the water getting warmer. Only when it is already too late (the frog dizzy from the heat) does it notice the rise in temperature, and the inherent danger. By then, however, it is too late. The frog cannot jump out, disabled by the warm water. On the other hand, a frog that is thrown into a pan of boiling hot water, will jump out immediately, shocked by the sudden change in temperature (Senge, 1990a).

3. Action orientation

As a rule, organisations and the people within them are focused more on action, rather than reflection. In the case of a problem, people do not want to get 'caught' doing 'nothing'. There is little room for reflection, which means that there is little time spent searching for the reasons that caused a specific problem. This results in solutions being directed at symptoms, rather than at the actual underlying problems (Garratt, 1988; Senge, 1990a).

4. Learning from errors

Errors can be a rich source for learning, but as several authors point out, it is not easy for organisations to learn from mistakes. Especially in those cases where errors are dealt with in a negative way. In general, two types of ineffective responses can be distinguished. The first is 'covering up': hiding the mistake and pretending it never happened. The second type of ineffective reaction is to assign 'blame', either to 'something' (for example 'the economy', or 'the system') or to 'someone' (a scapegoat). Both types of responses prevent analysis and thus prevent learning from the error. In the long run this type of behaviour can have additional negative effects on the individual and collective learning processes. For instance because people start hiding errors or become hesitant of experimentation (zie Senge, 1990a; Ogilvie & Spruit, 1990; Argyris, 1990).

It is important however, to realise that not all mistakes constitute a source for learning. Argyris distinguishes between 'unnecessary' errors; caused by negligence or nonchalance, and errors that were unavoidable, since they delineate the limits of someone's knowledge. This type of error is in fact an indication that the actual result of a specific action is different from what was expected. Therefore, the error contains information on the environment and enables the individual to change

assumptions and expectations (Argyris, 1990). Just like errors, successes can also be a source for learning. Successes are often celebrated, but not always analysed.

5. Defensive routines

Research by Argyris indicates that people usually do not reason in a logical way, whenever they are confronted by problems that they cannot immediately understand. Instead of analysing the problem and dealing with it in a rational way, they more often deny the problem, start postponing actions, become indecisive, start covering up problems…. Or in other words: they fall into 'defensive routines' (Argyris, 1990). Swieringa & Wierdsma (1990) make a distinction between fight and flight behaviour. People can either flee in inertia (waiting for a change) or in action (for instance rearranging jobs and tasks, without effectively tackling the real underlying problem). Fighting behaviour is characterized by a high energy level: people show resistance to admitting the problem, or start pushing solutions in an attempt to regain control over the situation. Defensive routines are most common in the case of double loop learning. This type of learning calls for a reorientation of (organisational) objectives and strategies, and adjustment of basic assumptions that are held on the environment. It is therefore a very challenging process that can be very threatening, and may invoke feelings of insecurity. Defensive routines help prevent double loop learning, and that is precisely why they are being employed. The problem is that these routines are to a large degree unconscious; people are unaware of them, which makes it difficult to change them (Argyris, 1990).

6. Limited communication between hierarchical layers

The final learning barrier to be discussed here, is related to the difficulty of transforming individual learning experiences into collective learning, because of communication obstacles (Gieskes, 2001). Problems and ideas that are picked up on the shop floor level are not always transmitted to management. Consequently, learning experiences remain limited to one person or team only, or spread only within the same hierarchical level. New knowledge is not shared and learning is not extended to the organisational level.

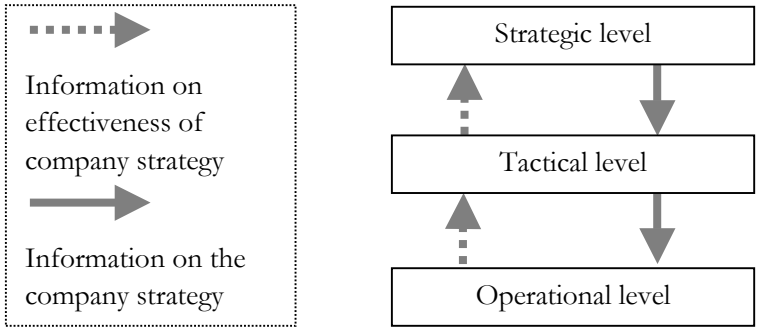
There are several causes for such communication jams. First, it sometimes happens that workers report their observations to their direct supervisor, but the latter fails to pass on the message to a higher management level. For instance because he suspects that higher level managers are not interested in worries from the shop floor, or because they assume that it is not their job to deal with employee concerns (Argyris, 1990). Secondly, workers tend to formulate a problem in such a way that it is not always clear to the management that this is relevant information for the company as a whole. For instance, because they report only one or two incidents (Nonaka & Takeuchi, 1995).

Thirdly, people receiving the information also cause disruptions in the communication process. Top-level managers are not always open to ideas or

suggestions from workers from the operating core. For instance, because these managers rather trust their own experience of being 'in the trenches' themselves. They still rely on their personal work experience in the operational process, even if it has been years since they last worked there. Also, top managers sometimes find it difficult to deal with 'bad news'. This may result in shop floor comments such as 'The top only wants to hear what they want to hear'. If this idea really takes root, organisational members will be more prone to covering up errors and passing on only positive information. Negative feedback (not supportive of the current strategy) will be withheld, though this is in fact very valuable information (Ogilvie en Spruijt, 1990).

All of these factors may cause the vertical communication to become limited to top-down information only. This hinders the organisational learning process, because important information that might give the top an indication of the effectiveness of the company's strategy, fails to flow back to the top. Senge describes it as the organisation separating its head (top) from its hands (base). In order to facilitate learning, a feedback loop is required, as is shown in the figure below.

Figure 2.2 Information flows in a learning organisation (Garratt, 1988)



In theory, middle managers could fulfil an important role in realising a feedback loop. If they are able to recognize valuable information as such, and if they succeed in translating this information in a way that the top can make use of it. Garratt therefore calls the middle managers the 'business brains', and Nonaka describes them as 'directors in the process of knowledge creation'. In practice, however, it is very difficult for the middle level to realise this connecting role, they are stretched too much between the conflicting interests and worries from the top and the operational core (Garratt, 1988; Nonaka & Takeuchi, 1995).

2.3 Self managing work teams and barriers to organisational learning

After reviewing the most common barriers to learning, the most interesting question is whether self-managing teams can be considered to help solve those barriers, and thus facilitate organisational learning processes. Though the starting point is

different, as is the track of reasoning, there is considerable overlap in the analysis made by STSD scholars and learning organisation theory. There are important similarities in the arguments from both 'schools'. In reviewing the possible contribution of self-managing work teams to solving learning barriers from each of the three categories (individual, structure-related, communication and culture-related), arguments from both will be used.

Individual barriers to learning

As mentioned in chapter 1, self-managing work teams potentially form a conducive environment for individual learning. Mostly, because of the opportunities for cooperation with team members, task richness and task enlargement, and because of the authority the team has to solve problems related to the day-to-day operations, and to realise process improvements. These workplace and job characteristics may help to overcome certain individual learning barriers. However, research indicates that self-managing work teams do not *automatically* form a conducive environment for learning. Potentially, conditions for learning are better than in more traditional work settings, but self managing work teams do not always fulfil this potential. This study therefore explores ways in which learning within teams can be facilitated in a structural way (see chapters 3 to 7).

Barriers related to design and structure

One of the basic lines of reasoning that can be distracted from both the STSD and learning organisation theories, is that the bureaucratic principles are valid in a stable environment, in particular for achieving efficiency, but they are less suitable for enabling the organisation to respond adequately to a turbulent context. On the other hand, self-managing work teams appear to provide a better basis for responding to changing circumstances:

- The principle of separating 'acting' and 'thinking' (transformational and managerial tasks) sometimes hinders organisations to deal adequately with disruptions in the process and stand in the way of improvements and innovations innovation. Self-managing work teams provide a means to connect both acting and thinking and thus should be able to help overcome this barrier to organisational learning.
- An extensive breakdown of work processes into small tasks and subtasks (maximum segmentation) results in lack of overview of the process as a whole and a lack of control over this process, which makes it more difficult to realise improvements or innovations. In an organisation based on self-managing work teams, the process is segmented less extensively. Teams work on relatively large parts of the work process, thus reducing the amount of interfaces and limiting organisational complexity. This results in a better overview of the work process on the organisational level.
- STSD scholars argue that the absence of possibilities to regulate work and work flows at shop floor level makes it difficult to solve disruptions in the work

process. Organisational learning theory provides the argument that 'hands-on management' stifles worker learning (and eventually also organisational learning). In self-managing work teams, the amount of hands-on management is reduced. Workers obtain more responsibility for the operational and some of the managerial tasks.

- Fragmentation of the work process and a low decision-making authority on the operational level may hinder learning from experience. Self-managing work teams, however, are responsible for an integral, more sizeable 'chunk' of the work process. Consequently, workers and team leaders have a better overview of (a part of) the work process, enabling them to spot possibilities for improvement, and they also have the authority (within limits) to realise improvements, enabling them to learn from experience.

In sum, a self-managing team appears to provide a better context for realising single loop and double loop learning processes on the team level, in the form of solving disruptions, realising improvements and (contributing to) innovations. A self-managing work team has both the required *overview* of the process and the *authority* to make changes with regard to the process, and sometimes even with regard to objectives (in cooperation with management). In other words, whereas task *enlargement* leads to an improved capacity for employees to spot possibilities for improvement, task *enrichment* enables employees to act upon these observations, and realize improvements. In STSD- or systems theory terms: a control or regulatory cycle is realized on the level of the work floor. This enables teams to respond directly to complex local situations, using the available potential. Without the need to involve managers higher up in organisational hierarchy in many decisions, team members can respond effectively to both internal and external contingencies in a more timely way. Learning on the team level takes place whenever the team realises or helps realise improvements or innovations in work processes, services or products (e.g. Dunphy & Bryant, 1996; Kuipers & Van Amelsvoort, 1990; Molleman & Van der Zwaan, 1994; Sips & Keunen, 1996; De Leede, 1997). In many cases, learning processes occurring on the team level can be considered to be organisational learning processes, because the knowledge is embedded in organisational culture, systems and structures (in other words: the collective memory). For example: the team solves a difficult disturbance in the workflow, or invents a new way of working that prevents these disturbances from occurring in the future.

So, there are reasons to assume that using self-managing work teams as a basic building block of the organisation can help to overcome several of the hardware-related barriers mentioned in the above, most notably:

- Organisational design founded on assumption of a stable environment;
- Strict demarcation of functions and departments;
- 'Hands on-management';
- The difficulty of learning from experience.

Other barriers, such as a lack of resources and difficulties of management teams, appear not to be affected directly.
However, as already mentioned in chapter 1, it has to be stressed that to allow for self-managing work teams to make a contribution to organisational learning, it is important that teams are embedded in a fitting organisational context. Teams should not be implemented in isolation (Orsburn & Moran, 2000). Research by De Leede (1997) specifically pointed out the important role of 'structural' context factors, such as technical support systems, HR systems, links with internal clients and suppliers in this regard.

Barriers related to culture and communication

Though implementing teams changes the fundamental 'lay-out' of the organisation, in itself this does not directly help to solve 'software related' barriers to organisational learning. But as mentioned before: it is contended that changes in the organisational design may help to realise changes in the communication and culture (Ross, 1992; Senge, 199a). It is not unreasonable to assume that implementing self-managing work teams may facilitate the development of new thought and communication patterns. It is clear however, that when implementing self-managing work teams in order to foster organisational learning, it is not enough to focus on implementing the new design. The 'software' also deserves attention if organisational learning is truly to be supported. Otherwise, if an organisational culture is dominated by issues such as: the power of past behaviour, a failure to recognize slow change, action orientation, difficulties in learning from errors and defensive routines, these will remain intact. Merely treating the implementation of self-managing work teams as a hardware-issue, will in itself not be enough to solve culture-related learning barriers.

A study by De Leede (1997) also emphasised the importance of the cultural and social aspects of the team context if the team is truly to contribute to improvement and innovation. This is congruent with an often-repeated warning in the literature that the implementation of self-managing work teams entails more than a restructuring of the organisation, or a redistribution of responsibilities. It is the reflection of a new management philosophy (a set of beliefs of how to run an organisation) that influences all aspects of organisation (Hitchcock & Willard, 1995; Orsburn & Moran, 2000).

Self-managing work teams as part of a learning strategy?

As mentioned before, using self-managing work teams as part of a strategy to foster the development of a learning organisation has two inter-related components (Onstenk, 1996):

- Supporting organisational learning;
- Fostering learning on an individual level.

Based on the previous, it seems that self-managing work teams indeed provide a promising tool with regard to realising organisational learning. Using such teams as a fundamental organisational building block may help to reduce several hardware-related learning barriers that are commonly met in organisations. Secondly, since teams potentially form a conducive environment for individual learning, they may help overcome individual barriers to learning

Discussion

However, some reservations have to be made. First, a real contribution to building a learning organisation can only be made if the *entire* organisational configuration is changed according to the self-managing work team concept. Merely implementing single teams will probably not help to overcome the more structural barriers to learning. Second, it is important that implementation of self-managing work teams is not treated as only a matter of changing the design of the organisation, but also of the *software*, since the organisational culture and communication patterns may also hinder organisational learning processes.

Third, in building learning organisations, it seems relevant to pay explicit attention to the issue of enhancing *learning on a team level*. Recent studies suggest that interest in teams as 'learning bodies' is growing. Supporting team learning in addition to individual learning is very important, because much of the learning is collective. Teams are able to create a collective memory, and retain knowledge, even if individual employees leave. Moreover, teams can potentially handle more complex problems than individuals, and thus increase the level and quality of learning processes. It seems important that team learning processes are specifically supported, because they are not straightforward (Kasl, Marsick & Dechant, 1997; Bolhuis & Simons, 1999; Homan, 2001; Ortenblad, 2001; Simons, 2001; Sprenger, 2000).

As a final remark, it has to be stressed that the analysis presented in the above is not meant to imply that all organisations should consider implementing self-managing work teams. It appears that self-managing teams are sometimes regarded as a 'wonder drug' for current organisational challenges and problems. As such, the concept runs the risk of becoming another management fad, of which many have already come and gone in recent years. It is important to emphasize that self-managing teams can be meaningful and promising design for a certain group of organisations, but are by no means a panacea for all organisational problems. Or, as Katzenbach & Smith state:

> 'Teams are not the solution to everyone's current and future organisational needs. They will not solve every problem, enhance every group's results, nor help top management address every performance challenge. Moreover, when misapplied, they can both be wasteful and disruptive.'
>
> (Katzenbach & Smith, 1993, p. 24)

For many organisations, a bureaucratic structure is, despite its flaws, still the most appropriate organisational design. For these companies, the benefits in the field of efficiency outweigh any problems in other areas. For other firms, which need to be extremely flexible, a project structure or an adhocracy is perhaps most appropriate (Molleman & Van der Zwaan, 1994).

Conclusion and follow-up

That being said, for companies embracing the concept of the learning organisation, because they want to improve their flexibility and increase their capacity for improvement and innovation, it seems that it is justified to consider using self-managing work teams as a means to that end. In other words: to use self-managing work teams as part of a learning strategy.

Self-managing work teams may help to foster team and organisational learning. The outcome of such learning processes is a change in the collective skill or knowledge base and improvements or innovations in processes, products or services of the team or organisation (Dixon, 1994; Simons, 2001). Self-managing work teams may also contribute to individual learning, the outcome of which is increased individual competence level and changes in behaviour (Simons, 2001).

This PhD-thesis aims to contribute to the use of self-managing work teams as a building block for an effective learning strategy, by examining ways in which *individual* learning processes within such teams can be promoted and facilitated in a structural way. Thus, the study *zooms in* on the potential of self-managing work teams to enhance individual learning (and thus to overcome organisational barriers to individual learning).

Chapter 3 presents the actual problem statement and research questions in more detail, and outlines the design of the study.

3 Methodology

While the previous chapters provided a background for the study, this chapter outlines the study itself. The problem statement and research questions are presented in section 3.1, as well as an overview of strategies for data collection and analysis. Sections 3.2 through 3.5 describe each of the main strategies: literature review, exploratory interviews, group interviews and case studies.

3.1 Problem statement and research questions

As explained before, the focus in this study is on discovering ways in which learning within self-managing work teams can be supported. This question is relevant, since teams are nowadays implemented more and more as part of a strategy to build learning organisations. The issue is addressed in a structural way: how can a nurturing learning environment be created within self-managing work teams? Or in other words: *How can learning within self-managing work teams be facilitated in a structural way?*

This problem statement was translated into three research questions[i].

1. In what way(s) do members of self-managing work teams acquire and develop competences? In other words: which types of learning activities can be distinguished?
2. In what way(s) can these learning activities be supported?
3. What conditions promote or inhibit learning within self-managing work teams?

Together, general *conditions* which influence learning and concrete *support* for learning (research questions #2 and #3) constitute the *'learning infrastructure'* of self-managing work teams. The study's aim was to construct a framework for this learning infrastructure, and to detect important elements in this infrastructure.

Data collection and analysis

In order to answer these research questions, a number of research activities were undertaken:

1. Literature review regarding learning, self-managing work teams and the learning organisation, and the relationship between self-managing work teams and organisational learning;
2. Exploratory interviews with experts and practitioners on (learning within) self-managing work teams;

3. Group interviews on supporting learning within self-managing work teams, and conditions for learning;
4. Case studies of learning infrastructures of self-managing work teams.

Table 3.1 provides an overview of which strategies were used to answer each of the research questions.

Table 3.1 Overview of data collection strategies

	Literature review	*Exploratory interviews*	*Group interviews*	*Case studies*
1. Learning processes	✓	✓		✓
2. Supporting learning	✓	✓	✓	✓
3. Conditions for learning	✓	✓	✓	✓

In the next sections, the purpose and design of each of these activities are described in more detail.

3.2 Literature review

The first research activity consisted of a literature review, in 1997, focusing on all of the research questions. Literature in fields such as STSD, teams, team learning, organisational learning, learning organisation, HRD, cooperative learning, self-directed learning, on-the-job learning and psychology of work and organisation was analysed in order to:

a) Create a thorough picture of the context for this study. The review was meant to create an overview of the theoretical background and nature of self managing work teams, and reasons why companies implement such teams. It also served to understand how self-managing work teams fit within the larger conceptual framework of the learning organisation.
b) Identify possibilities for concrete support for learning, and distil general conditions which enhance (or obstruct) learning within the context of self-managing work teams. In other words: it was used to design a tentative framework for the 'learning infrastructure' of self-managing work teams (research questions #1, #2 and #3);

Several strategies were used to collect relevant literature:

1. Scanning several literature databases, with an extensive set of relevant key words (e.g. learning organisation, self-managing work teams, workplace learning, HRD):
   - on-line contents (PICA), nation-wide;
   - library catalogue University of Twente;
   - on-line catalogue of all libraries in the Netherlands (OBN);
   - ERIC, BEA, AEA.

2. Studying earlier literature reviews on the learning organisation (Tjepkema, 1993) and self-managing work teams (Ter Horst, 1997; Janssen, 1996);
3. The 'snowball' method: finding new literature references in the literature that was studied.

Since the amount of literature on self-managing work teams was expected to be quite large, it was decided to mainly use books, conference papers and articles published by 1980 or later. An exception was made for certain 'standard works' in this field: these have been included as much as possible, also when the publication date lies before 1980. For the topics of 'learning' and 'the learning organisation', no sources were excluded beforehand, but an attempt was made to include recent literature as much as possible.

The review focused both on theoretical explorations, and on publications reporting on empirical evidence (research reports / articles, conference papers, case studies, project reports etc.), though the latter proved more difficult to find.

Results with regard to self-managing work teams and the learning organisation are reported in chapters 1 and 2, outcomes regarding the learning infrastructure of self-managing work teams are reported in chapter 4.

3.3 Exploratory interviews

Following the literature review, at the start of 1998, exploratory interviews with experts and practitioners were used mainly to gain more insight in the actual *practice* of (learning within) self-managing work teams *in the Netherlands*. This was considered a useful addition to the theoretical orientation by means of the literature study, mainly because much of the literature was of British or North American origin. Because of the exploratory nature of the interviews, only open-ended questions were used. A total of seven interviews were held, three of which were expert-interviews in the more traditional sense, and four interviews were held with practitioners from two organisations in which self-managing work teams were being implemented (of course these can also be considered as a type of experts, by virtue of their practical experience). Table 3.2, on the next page, provides an overview of the interviews.

Just as the literature review, the exploratory interviews focused on all three research questions. The expert interviews were quite open-ended in nature, topics that were discussed included:

1. The number of companies in the Netherlands that employ self-managing work teams, and their reasons for doing so.
2. Ways in which companies that work with self-managing work teams, deal with issues in the field of learning and training. Does their approach change after the implementation of teams?

Moreover, the interviews were used as a first tentative test of the face validity of first drafts of the framework for the learning infrastructure that was build on the literature study.

Table 3.2 Overview of exploratory interviews

Experts	#1	Senior researcher University of Amsterdam, SCO-Kohnstamm Institute; author of many publications in the field of (integrating) learning and working and the relationship with modern forms of organisation of work.
	#2	Professor Nijmegen University, director and founder of ST-groep, a consultancy firm specialising in organisational redesign, implementation and development of self-managing work teams, author of many publications in the field of Sociotechnical Systems Design (STSD).
	#3	Director of Center for Pedagogical Expertise, trainer/consultant with regard to implementation and development of self-managing work teams.
Practitioners	#1	Manager Training & Development at Polaroid.
	#2	Training & Development consultant at Polaroid, mentor of Work Meeting Teams.
	#3	Industrial Engineer at Philips Lighting Winschoten.
	#4	Trainer at Philips Lighting Winschoten, mentor of several self-managing work teams.

The interviews with practitioners focused on their experience with (supporting learning in) self-managing work teams in their company. Questions were directed at:
1. Reasons for working with self-managing work teams;
2. The specific team-concept, as used in their company;
3. The implementation process of self-managing work teams;
4. Support for learning within self-managing work teams, provided by the organisation in general, and HRD staff in particular.

Results of the exploratory interviews are not reported separately, but woven into the chapters 1, 2 and 4.

3.4 Group interviews

As a third step, group interviews were conducted, in the spring and fall of 1998. *Three meetings* were organised, which lasted *one full day* each. Every meeting was attended by 10 - 15 participants each (36 in total), with various backgrounds.

Objectives

The purpose of the group interviews was to construct a design for the learning infrastructure of self-managing work teams (called 'support structure for learning' in that phase of the project). Therefore, central questions were:

- What types of learning interventions can be employed to support learning within a self-managing work team?
- Which organisational members are involved in providing this support for learning?
- How can the effectiveness of these activities be determined?

Based on the literature review and the exploratory interviews, a tentative framework for the learning infrastructure had been made, identifying relevant categories of support for learning. Also, the framework was partially filled with concrete examples of learning interventions. The purpose of the group interviews was to:

a) Validate the categories: do they represent a useful framework for the learning infrastructure of self-managing work teams?
b) Collect data, to 'fill' the framework with examples of learning interventions, and empirical evidence for the usefulness of these interventions.

To this end, the participants were presented with an 'empty' framework, and asked to provide input for this model, based on their own experience and knowledge (see the description of agenda and interview technique below). Providing an *empty* framework was considered important to enhance reliability.

Selection of participants

A first basic decision with regard to the selection of participants for the group interviews was to invite both experts and practitioners. The exploratory interviews learned that both have different perspectives, which complement each other. Moreover, an interesting discussion was expected to arise from the variety in perspectives.

The term 'experts' is used to refer to people who have acquired a vast amount of theoretical and practical knowledge in the field of self-managing work teams and / or support of learning within work organisations. Examples are: researchers, authors, consultants, managers or HR professionals. Next to experts, who can provide a broad helicopter view, and who also are familiar with theory, it was considered important to invite practitioners who work in, or with self-managing work teams, such as managers, team leaders, HRD professionals or engineers. Typical for this type of participants is that they experience the realities of teamwork everyday. Therefore they could add in-depth explanations and practical evidence to the discussion.

Secondly, it was decided to invite participants from two different backgrounds, in order to tackle the issue of supporting learning within self-managing work teams from a broad angle:

- Organisational theory and management: implementation and management of self-managing work teams;
- HRD and educational theory: supporting learning within work organisations in various ways (learning in the work place, modular training, etc.).

Some participants were experts in both fields.

However, a respondent's input is not only determined by his or her professional background (discipline), their type of job is also important to consider, since this equally shapes their perspective. Therefore it was decided to invite four types of participants:

- Researchers;
- Consultants;
- Trainers / HRD practitioners;
- Managers / team leaders.

In order to identify possible participants, the following resources were used:

- The researcher's personal network;
- Referrals from experts in the field;
- Conferences and seminars on self-managing work teams, identifying both experts and companies employing self-managing work teams;
- Articles and interviews on self-managing work teams, identifying both experts and companies employing self-managing work teams.

Exploring these resources resulted in an initial list of 49 people or organisations, all of which were then contacted by phone. In the ensuing phone conversation, the purpose of the study was explained, and people were asked if they would be interested in participating in a group meeting. If so, further questions were asked to determine their knowledge in the field. Some respondents referred the researcher to other colleagues in the same organisation who would be better equipped to participate (because of their function, their personal interests or because of practical reasons, such as time constraints). All in all, 38 people were willing to attend a group interview. Since some of them wanted to bring a colleague, the total number of potential participants was 44. Later on, two more participants were added, bringing the total to 46.

Eleven people who were contacted by phone were not willing to participate, for a variety of reasons. The most important reason was a felt lack of knowledge on the topic, and /or experience with self-managing work teams. Another common motive was lack of time. One of the potential participants was on the brink of leaving the country for an extended period of time.

After collecting dates on which the interested participants would be able to attend, and gathering more information on their professional backgrounds, three groups were formed. Care was taken to compose the groups in such a way that each interview was attended by a mix of researchers (from both the fields of management studies and HRD), HRD consultants, management consultants, HRD practitioners and line managers or team leaders. Table 3.3 on the next page shows to what extent this blend was actually achieved.

Participants' profile

Eventually, of the 46 people who were invited, a total of 36 were actually able to attend an interview. Ten respondents had to cancel in the last minute, due to circumstances such as illness, unexpected work pressure or other obligations at work. The number of cancellations was largest for the final interview (five out of fourteen participants had to cancel), in the first two interviews the situation was more favourable (two and three cancellations, respectively). Consequently, the third meeting was attended by the smallest number of participants (nine), the first two both had a higher attendance level (thirteen and fourteen participants respectively). Table 3.3 provides an overview of participants to each of the meetings.

Table 3.3 General characteristics of group interview participants

	Meeting 1	*Meeting 2*	*Meeting 3*	*Total*
Participants				
• Number invited	16	16	14	46
• Number that attended	13	14	9	36
Background				
• Organisational theory / management	6	5	7	18
• HRM / HRD	4	7	2	13
• Combination	2	2		4
• Missing	1			1
Working experience with teams				
• < 1 year		2		2
• 1 - 3 year	2	6	3	11
• 3 - 6 year	6	4	5	15
• > 6 year	4	2	1	7
• Missing	1			1

As mentioned earlier, a well-balanced mix of participants with different backgrounds and jobs was aimed for. In planning the meetings, it was not always possible to create an optimal 'mix', because of pragmatic reasons (matching diaries). During the group interviews, the professional background of participants appeared to influence their input most strongly. This seemed to colour people's perspective more than the type of job they held. Table 3.3 therefore shows the respondents' background in either organisational theory / management or HRM / HRD. A small number of participants held a job in which they combine both areas of expertise. The table shows that in the first and second meeting, participants were divided almost equally over the different backgrounds, but the third group of participants was less well balanced. In that interview, the perspective of organisational theory was over-represented, as a result of a relatively large number of last-minute cancellations.

When considering the total group of participants, most people (18 respondents) had a background in organisational theory / management, a somewhat smaller group (13 respondents) was active in the field of HRD / HRM, whereas only a small number (4 respondents) worked in both areas at the same time.

In general, participants possessed an extensive experience (either through research, or through hands-on experience) with self-managing work teams. On average, participants in the first and the third meeting held the most years of experience (three to six years for most of them). Participants in the second meeting generally were somewhat less experienced (one to three years). Looking at the total group of respondents, most of them (15 people) had three to six years of experience in working with self-managing work teams, whereas a somewhat smaller portion (11 respondents) possessed one to three years of experience.

Format group interviews

In order to interview a broad group of respondents, three meetings were organised, with 10-15 participants each (a minimum of 15 participants were invited for each meeting). This was deemed necessary for practical reasons: accommodating all the different diaries required organising more than one meeting. But more importantly, organising three meetings was a necessary requirement to interview respondents in small groups, with room for active participation by all participants. The interviews lasted one full day each, in order to allow for sufficient time to exchange experiences and for in-depth discussion.

In order to facilitate group discussion, a combination of *the critical incidents technique* (Ellinger & Watkins, 1998) and the *Metaplan method* (Habershon, 1993) was used.

- The critical incidents technique is an experience-based interview technique (originally developed for task analysis) that helps focus the discussion on practical experiences, rather than generalisations and opinions. This is important for both a pragmatic reason (remarks are very concrete, thus improving clarity of the discussion) and a methodological reason (high empirical relevance of the input).
- The Metaplan Method is a technique for targeted group discussion. Important basic principles of this method are: allowing for active participation from all, keeping the discussion visible throughout the process and reaching conclusions that are clear for all. A central question always guides the discussion. By writing input from participants on cards that can be pinned to the wall, or by having the facilitator write directly on large flip-over sheets as participants call out their input, a large amount of (partial) answers for this question are collected (*brainstorm*). During the subsequent discussion, answers (cards) can be clustered, if necessary, and each cluster given a label (*clustering, categorising*). After the discussion, by voting, participants can express the importance they attach to the different (clusters of) answers (*prioritising*). By marking the answers they find

most important with a colourful sticker, a clear picture is created of the group's opinion.

Below, the actual interview format, which is based on these two methods, is described. Each of the three meetings proceeded in a similar fashion, in order to allow for comparison of results.

In *preparation*, participants were asked to reflect on 'critical incidents' regarding supporting learning within self-managing work teams. These could either be personal experiences, or experiences from others, or case descriptions from literature or (personal) research. Respondents were asked to consider not only what happened (in what way was support for learning provided) but also the consequences of this event. They wrote down each incident on a card (size A5) in large print. Blank cards were provided together with the instructions for preparation.

Particularly in order to allow those participants with a research background to provide more theoretical input for the discussion, participants were also asked to identify for themselves the main theoretical notions with regard to learning in teams. This is, originally, *not* a feature of the critical incidents technique, but was deemed especially important for the researchers that participated in the interviews to give their input. Eventually, all participants were found to use the opportunity to not only provide input based on some concrete experiences, but to include also more general (theoretical) insights. In order to separate 'theoretical / general input' from 'practical / incident input' two differently coloured sets of cards were used (yellow and green).

In order to make sure that the context was clear to everyone, each meeting started out with a brief introduction on the study, on the nature of self-managing work teams as they are defined in this study and the empty tentative framework of the learning infrastructure was presented. Participants were invited to provide feedback and ask questions for clarification. In order to influence them as little as possible, only the categories from the framework were presented, not the actual 'content'. The idea was to use the framework as an 'empty filing cabinet', in which participants could file their interventions, activities, conditions and working principles for supporting learning in self-managing work teams.

After the plenary introduction, participants split up in three or four small groups to share experiences and cluster those where possible. These clusters were then collected in a plenary discussion. During this discussion, an attempt was made to fit the clusters of interventions, principles, experiences etc. into the general framework.

As a final step, findings were discussed plenary, highlighting general trends in the findings, and prioritising the input. Which elements of the learning infrastructure are thought to be imperative and why (theoretical arguments, practical evidence)? Every

participant got to cast three votes, for those issues that they considered most essential for a team's learning infrastructure. (N.B. This step was skipped in the third meeting. A relatively small number of participants (nine people) attended this interview. Participants split up in two groups, and the outputs of the two groups differed so much that it immediately became clear where each group had placed accents.)

Next to this agenda, that was kept the same for all of the meetings, three separate issues were discussed in only one of the meetings. These were:

- roles of the people involved in supporting learning (meeting #1);
- effectiveness of support for learning (meeting #2);
- hallmarks of teams that are good learning environments: what distinguishes such teams? (meeting #3).

These were all issues that were considered to be important, but there was not enough time to address all of them in all three meetings, therefore they were divided over the different sessions.

Analysis and results

In order to infer conclusions with regard to the research questions central to the group interviews, the results were organised in matrices, and subsequently analysed (Miles & Huberman, 1981). A report was made for all of the meetings separately, and for the three meetings overall. This was sent, as an extra means of verification, to all participants.

The group interviews provided support for the original tentative framework for the learning infrastructure, and provided insight in important elements in the learning infrastructure ('filling' the model). The importance of general conditions supporting learning also lead to a *reorientation* on the original framework. This was broadened, to not only incorporate support for learning, but also general conditions influencing learning. Additional *literature* was gathered to further explore the notion of conditions for learning, and corroborate findings from the group interviews.

As a second – and even more important - result, the group interviews (as well as the literature review) provided much input for constructing an overview of the learning infrastructure of self-managing work teams: a large amount of supporting interventions, activities, tools and general conditions for learning within self-managing work teams were collected.

However, though great care was taken to ensure reliability of findings in the group interviews, the nature of the findings from the group interviews and the literature review was such that the empirical foundation for outcomes regarding elements of the learning infrastructure could not be sufficiently guaranteed (this is described more elaborately in chapter 5).

A second problem related to the large number of elements in the learning infrastructure. It was still largely unclear which parts of the learning infrastructure are most crucial to supporting learning or whether all elements are equally important.

Thirdly, the picture of the learning infrastructure resulting from the group interviews and the literature review was very fragmented. To reach a more thorough understanding of the nature of learning infrastructures, it was considered to be helpful to also have practical, integral descriptions of learning infrastructures in practice, showing 'the whole picture'. Therefore, *case studies* were conducted as a next step.

Results of the group interviews are described in more detail in chapter 5. Background documents are included in appendix II:
- II.a Overview participants' organisations and job titles
- II.b Invitation letter, including preparatory questions
- II.c Agenda for each meeting

3.5 Case studies

In order to analyse and explore the 'learning infrastructure' of self-managing work teams further, three case studies were conducted in the spring of 1999, the fall of 1999 and the spring of 2000.

Objectives

It was decided to use *analytical or interpretive* case studies, with a predominantly *explorative* character (Swanborn, 1996; Yin, 1984). The case studies served three purposes:

a) Validation: to further support the inventory of learning activities and learning infrastructure elements, by gathering (additional) empirical data;
b) Evaluation: weighing the different elements in the learning infrastructure, to discover which ones are truly essential;
c) Clarification: to understand more about the *nature* of learning infrastructure of teams (e.g. types of learning infrastructures, relationships between elements of the learning infrastructure).

A multiple case design was used. For three teams, in three different organisations, the learning infrastructure was analysed and described. That is to say: a description was made of the types of learning processes, the most important concrete support each team (member) experiences in learning, and the most important conditions for learning (inhibiting or enhancing). A framework for the learning infrastructure, based on literature and the group interviews was used to guide data collection, but an open mind was kept as to new information, not yet incorporated in the framework.

Design

Results from the group interviews and the literature review underlined the importance of general organisational context factors for learning within teams, next to factors on the team level. It was therefore considered not sensible to limit data collection to one company only. For this reason, case study teams were selected from different organisations, in order to include in the analysis - to some extent - differences in the general organisational characteristics (such as the extent of self-management, role of top level managers, organisational culture, etc.).

First, it was decided to include cases from professional service industry as well as from manufacturing industry. Traditionally, opportunities for learning in the work place differ in both types of companies, as do the ways in which learning is organised and supported (Van der Krogt, 1990; Warmerdam & Van den Berg, 1992). It is interesting to investigate for both types of companies how the traditional ways of supporting learning change when implementing self-managing work teams. Probably, conditions and support for learning differ for both organisation types. But wherever the *same* factors are found to influence learning in the *different* business contexts, this provides extra assurance that these factors do indeed matter.
Another reason underlying this choice, is the growing prevalence of self-managing work teams in the service sector. Whereas the concept used to be applied mainly in manufacturing industry, it is implemented in service organisations to an increasing degree.

Second, since the nature of the organisation as a whole also appears to be an important condition for the type of learning conditions in teams, it was considered necessary to include a team from a firm explicitly built on the principles of self-management; in addition to teams from companies with a more bureaucratic history, that only recently implemented self-managing work teams. The group interviews indicated that the extent to which the entire organisation is based on self-management, and the degree to which top management inspires and motivates people for self-management and learning, are important factors when it comes to learning within a team. Conditions for learning within organisations geared toward self-management and learning, were believed to be more favourable than in companies characterised by bureaucratic and hierarchic principles. If this is really true, it can be expected that teams in companies that are only just implementing principles of self management and learning, would encounter more forces inhibiting learning, such as: team leaders who do not yet include team members in making plans, or who are not used to their role as coach, team members who don't experience a sense of urgency for learning, reward systems based on hierarchy instead of on performance, etc. It is very likely that organisations without a 'bureaucratic' history, implementing self-management in a so-called greenfield situation, should be bothered less by such factors. Therefore, it was decided to include at least one case from such a 'greenfield' company, in order to be able to investigate whether the conditions for learning are really more favourable there.

In order to investigate research questions #1 to #3, the following multiple case study design was developed (Yin, 1984).

Table 3.4 Case study design

	Company with 'bureaucratic past'	*Company based on self-management*
Manufacturing industry	team A	team C
Professional service industry	team B	team D

Selection of cases

The subsequent selection of case study teams took place in two steps. First, suitable cases were selected based on the researcher's personal network and publications in the field of self-managing work teams. Participants from the group interviews constituted a rich 'pool' from which to draw. Much information was already gathered about the teams in those organisations. Using this information, potential cases were selected for cells A and B from the selection matrix. Finding teams for cells C and D, however, proved more difficult. This population of companies is much smaller. However, by tapping the network of experts in self-managing work teams, an adequate case organisation was found for cell D. It proved so hard to find a case organisation for cell C, that eventually it was decided to give up the search. Though less ideal, it was still possible to compare greenfield situations to companies with a bureaucratic past, even with only one 'greenfield case'.

So, eventually, three potential teams were selected:

- A team of operators in one of the packaging lines of Heineken. Beer is packaged in tin cans directly after production (cell A).
- A team of maintenance and service mechanics from Document Company Xerox. This particular company does not manufacture copiers or printers; this is being done by the mother organisation (based in the US). The Dutch company only provides sales and services for the products in the Netherlands (cell B).
- A team of ICT consultants from Solvision. This particular team focuses on projects aimed at connecting business strategies with ICT applications (cell D).

Both Heineken and Xerox have only recently implemented self-managing work teams. Their background is a originally a more bureaucratic, hierarchic organisation. By contrast, Solvision is still a very young organisation, and was founded deliberately based on the principles of self-management.

In order to determine whether the potential case teams were indeed suitable, more background information was gathered on these teams, to determine whether they fit the description of self-managing work teams. This constituted the second step in the selection process. Based on the literature study, a comprehensive definition of self-managing work teams was formulated (see chapter 1). This definition was used to select cases.

For each of the potential case teams, two structured interviews were conducted for the purpose of selection, one with a company representative (e.g. member of the management team or HRD staff) and another with a team representative (e.g. team leader). The interviews lasted one hour each, and were conducted face to face. Next to the interviews, relevant documents (such as company brochures, vision statements, annual reports) were also used to support interview findings or add information. Based on the results of this background research, it was decided to use all three selected cases.

Table 3.5 Overview of case study teams

	Company with 'bureaucratic past'	*Company based on self-management*
Manufacturing industry	• Heineken team (operators)	-
Professional service industry	• Xerox team (service engineers)	• Solvision team (business and ICT consultants)

Data collection and analysis

Data collection

For each case, data were collected from several sources (top management, HRD professionals, team members, operational managers) using multiple methods (questionnaires, interviews, learning logs, document analysis) to enhance reliability (triangulation, Yin, 1984). Using rather standardised instruments and operating according to a data collection plan is important in a multiple case design, in order to facilitate case comparison in analysis (Miles & Huberman, 1981). Therefore, instruments were designed based on the tentative framework of the learning infrastructure (see chapters 4 and 5), and a detailed plan for data collection plan was formulated. In this plan, criteria to select cases were identified and three basic variables were defined and operationalised to guide data collection for the first three research questions:

1. Learning processes (research question 1);
2. Support for learning (research question 2);
3. Conditions for learning (research question 3).

To collect data on these topics, it was planned to use combination of methods:

- Semi-structured interviews, with a top level manager, the team leader, three team members, an HRD practitioner;
- Questionnaire for team members who did not participate in an interview, in order to include their viewpoints as well;
- Learning logs from three team members (the same who participated in an interview);
- Document analysis (for instance policy documents, annual reports, company descriptions, mission statements, learning plans…).

The table below provides a basic data collection plan for the case studies, displaying both the topics and data collection strategies used for the different respondents. *Document analysis* was used to obtain information on all topics.

Table 3.6 Data collection plan case studies

Topics:	*Top level manager*	*Team leader*	*Team members*	*HRD practitioner*
1. Learning	• Interview	• Interview	• Interview • Questionnaire • Learning log	• Interview
2. Support for learning		• Interview	• Interview • Questionnaire • Learning log	• Interview
3. Conditions for learning	• Interview	• Interview	• Interview • Questionnaire	• Interview

The *interviews* were *semi-structured*, and an *experience based* technique of interviewing was used in order to enhance reliability of findings, especially with team members, when they were questioned on their learning activities. Rather than asking a score of questions on the conditions and supportive factors as such, learning experiences were taken as a vantage point. Respondents were asked to recall recent learning experiences, which were subsequently analysed: what did the respondent learn, and how? Was the learning planned for, or did it occur spontaneously? What kind of support was received, according to the respondent? What conditions helped or hindered the learning process? Especially for revealing information on the more informal ways of learning, this way of interviewing proved very useful. Initially, respondents tended to associate learning with formal learning activities only (a course they recently took, for instance). After analysing this example, the interviewer specifically asked for examples of other types of learning processes. In the analysis, the emphasis was on those conditions and supportive factors which respondents themselves mentioned, in order to obtain the most reliable picture. The list of conditions and support factors was used as a checklist, however, which the interviewer could draw upon for questions on specific topics if these were felt to

receive too little attention, or if the respondent found it difficult to mention specific factors, influencing the learning process.

Interviews were always recorded on audiotape. Afterwards, an interview report was made based on this tape and the interviewer's notes. The interview report was sent to the respondents to be checked and amended if necessary.

Interviews proved to be the major source for data collection. Especially the interviews with team members and team leaders provided the 'backbone' of the case study descriptions. But the interviews with HRD professionals and top-level managers yielded much relevant information as well. In all cases, interview results pointed in the same direction, which is an indication of reliability.

However, some threats to reliability could also be observed. Even though great care was taken not to 'steer' respondents (by using an experience based interview technique), since most people are not very aware of informal learning activities, it still proved difficult for them to give an accurate account of their own practice in this regard. Asking questions with regard to this topic invoked 'on-the-spot' reflection on this topic. Also, effects of social desirability cannot completely be ruled out.

Document analysis was used as a source of information as well. For each case, specific documents were looked for, such as policy documents (both general company strategy and HRD policy), instruments for learning, annual reports, company information, etc. But other documents were collected as well, if these appeared to be relevant, based on the interviews. Documents were also important in providing background information, and providing a context for the data from the interviews.

The coverage of respondents was imperfect. Not all team members were interviewed. A *questionnaire* was used mainly to be able to include the viewpoints of all team members. It was more general in its scope. Instead of analysing specific learning situations, the questionnaire asked more general questions on for instance: ways of learning, factors inhibiting or stimulating learning and on people important in supporting learning processes. In order to ensure a high response rate, the questionnaire was kept brief (1 page). Questions were mainly open-ended, though some were closed (this option was chosen if possible, to facilitate filling out the questionnaire). Of course, data collection in this way is much less in-depth, and is not very suitable to uncover *new* elements. But it was considered a suitable way to check whether the interviews were more or less representative for the entire team. Consistency in the pictures, sketched by the different respondents, was also used to check for reliability of findings.

The questionnaires served mainly to corroborate interview findings, thus they were mainly instrumental in increasing reliability, but did not reveal much new information. In the first two cases, questionnaires were filled out by almost all team

members, but in the last case, this was not so. However, this was not felt to harm reliability of findings in a serious way.

Learning logs were meant to collect and analyse specific learning experiences. After the interview, some respondents were asked to keep track of their major learning experiences during a period of three weeks. At the end of each week, they were contacted to ask whether they had logged specific experiences. Next to describing the experience itself according to specific questions (such as what was being learned and if the learning was planned for or not), respondents were also asked to name the most important factors in the learning process (conditions or support for learning). This data collection strategy has one major drawback when it comes to reliability, namely that it influences the learning process itself. Since it invokes reflection, it increases the chance that respondents learn from their work experiences. But since the main aim of the case studies was to make an inventory of conditions and support for learning, rather than measure learning processes as such (e.g. by describing which type of learning processes occur most often), this was not considered too big a problem. *Eventually, however, learning logs were used in the first case study only*. They proved to be laborious to fill out for respondents, and since they provided little information, they were not used again in the second and third case.

Finally, it is important to mention that though the data collection plan served as a means to focus data collection, and especially for analysis, in all of the data collection strategies, 'one eye was kept open' for other conditions and supportive factors, as is important in case study research, especially in studies of an explorative, descriptive nature (Yin, 1984; Swanborn, 1996).

Data analysis

Data were analysed using the matrix method for within case and cross-case analysis (Miles & Huberman, 1981).

First, a within-case analysis was performed for each case. The interview reports, documents, questionnaire results and - if available - learning log results were all analysed for relevant input in the matrices (the questionnaires were first compiled into a one-page schematic report per case, so they could be included as a set, not as separate units). A coding scheme was based on the data collection plan, and text segments were first coded according to this scheme. Based on the codes attached to the text segments, these were then displayed in matrices. Matrices were constructed based on the topics in the data collection plan, and added on and changed during the analysis process, in order to facilitate inclusion of new categories of information. By displaying the information in these matrices, an overview was created. The matrices were used to compile a within-case report, which was sent to the respondents to check as a means to enhance reliability.

In these initial stages of data analysis, it was chosen to summarise as little as possible, and instead to adhere to the original statements of respondents as much as possible, in order to increase the chance of gaining new insights (new categories of conditions etc) (Miles & Huberman, 1981). Therefore, the case reports also were rather lengthy (approximately 40 pages), providing in-depth descriptions of learning infrastructures within the teams.

The second step was to perform a *cross-case* analysis. Basically, the same procedure was followed, with similar matrix templates. By summarising data, and displaying these in a schematic form, similarities and differences across the cases became apparent. From this broad overview, conclusions with regard to the research questions could be drawn.

Results of the case studies are described in chapter 6. Relevant background documents are included in appendix III:

- III.a Data collection plan
- III.b Checklist for selection interviews
- III.c Interview checklists
- III.d Questionnaire
- III.e Format learning log

4 Learning infrastructure of self-managing work teams: tentative framework

This study aimed to clarify ways in which learning within self-managing work teams can be supported in a structural way. To this end, a framework for 'the learning infrastructure' was developed. A first draft was constructed, based on a literature review. Section 4.1 offers a description of the basic perspective on learning that guided this study; also the nature of the concept of a learning infrastructure is discussed and compared to current views of the corporate HRD function. Different types of learning activities of workers in self-managing work teams are described in sections 4.2 through 4.4. These learning activities form the 'backbone' of the framework for the learning infrastructure that is presented in section 4.5.

4.1 Supporting learning within self-managing work teams

The focus of this study is not on learning as such, but on creating an environment for learning. However, underlying any interpretation and model of a learning environment is a certain understanding of the nature of learning. Therefore, this section first discusses the dominant perspective on learning, underpinning this study, in subsection 4.1.1. This perspective on learning impacts current views on supporting learning in a corporate context, or in other words, the learning function or HRD function. These views are discussed in section 4.1.2. Finally, the notion of a learning infrastructure for self-managing work teams is described in 4.1.3.

4.1.1 Learning

Basically, learning is seen as the process whereby people acquire and develop competences, necessary to fulfil certain tasks, jobs or roles. Competences are considered as integrated set of knowledge, attitudes, skills and personality traits of a person (see Mulder, 2001).

Learning *processes* can be distinguished from learning *activities*. Learning processes are unconscious, hidden mental processes that result in changes in competence (levels).

By contrast, learning activities refer to (mental) activities people undertake in order to influence the learning process (Simons, 1996; Lankhuijzen, 2002). The primary objective of this study is not to so much to explore *how* learning takes place, but rather how *support* for this learning can be organised within the context of self-managing work teams. Therefore, this study focuses on learning activities. In a sense, the learning processes themselves remain a 'black box'. Nevertheless, it is important to make explicit the main notions on learning processes that guided this study, since views on what learning is, directly influence the ideas on how to support it.

Learning within self-managing work teams

Self-managing work teams are a good example of the upcoming organisational models in which 'learning' is regarded as part of 'working'. In self-managing work teams, learning and working are closely intertwined. This in sharp contrast to the situation in the archetype of the bureaucratic organisation, in which 'working' and 'learning' are two separated worlds. Putting things a bit black & white, in the classic bureaucratic model, 'working' is done on the shop floor, or behind a desk; whereas 'learning' takes place in classroom situations, or during explicit on-the-job training moments. Learning is targeted towards developing the level and nature of workers' competences to fit the tasks they perform (sometimes called an 'adjustment strategy', see Van der Krogt, 1990). In self-managing work teams, this strict division of learning and working disappears. Learning is not only an activity enabling workers to realise an adequate job performance, it becomes an integral part of the job.

This intricate link between learning and working is directly related to the aim of self-managing work teams. These teams are not only implemented with the aim to work fast and efficiently, but also to operate flexibly, solving problems and working on improvements on a daily basis. In other words, teams are required not only to fulfil a certain operational task (e.g. building a refrigerator motor, handling an insurance claim), but also to work on quality improvement and to improve work processes and products. Moreover, solving problems and (process) disturbances and realising continuous improvements are essential aspects of work (the principle of integrating operational and regulatory activities, see chapter 1)[i]. Learning is essential in order to realise those tasks, and so, as Sugarman explains:

> 'In place of the old model, which was first learning, then work, we now have the new model: first learning, then work-which-includes-continuous-learning. We are not just learning to do the work better; we are building the organisation's knowledge base and revising its tools, processes and products, as we work.'
>
> (Sugarman, 1998, p. 65)

The above is not meant to imply that the only relevant type of learning processes to be considered is this type of 'learning *as part of* the job'. Learning in order to acquire

competences that are required for a good job performance, or in other words, 'learning *for* the job' are equally relevant.

Perspective on learning

With this interpretation of the role of learning within self-managing work teams in the background, learning itself is considered as:

- An active, and highly social process of sense making and construction of knowledge and competences (an approach known as the constructivist perspective);
- A process that can be more or less formalised, that is: planned, or structured;
- A process that can take place on- or off- the job.

All in all, this notion of learning is very much related to what Simons (1996; 1999b) describes as 'new learning'. As such, this perspective is very fitting, but not *exclusive* for self-managing work teams. Rather, it is a perspective that is increasingly common when considering learning within a corporate context. In ever more firms, learning and working are closely related. Below, each of the key elements from this view on learning is discussed.

Constructivist perspective

The constructivist theory on learning has greatly influenced ideas on learning in recent years, both within educational settings and within corporate HRD. The view on learning that is held in this study is more strongly linked to this approach, than it is to the more cognitivistic and behavouristic approaches to learning. Central to the constructivist perspective is the idea that knowledge as such cannot be transmitted: it has to be constructed by each individual: 'learning is an act of interpreting experience, that interpretation is unique to each individual and is both enabled and constrained by the individual's process of sense making' (Dixon, 1994, p.11). As such, the constructivist perspective represents both a theory on *how people learn* (namely through active construction of knowledge) as well as a specific outlook on the *nature of knowledge* (as subjective, uniquely personal, highly tacit in nature, and as highly action-oriented, rather than as 'a body of information') (see also Dixon, 1999; Kessels, 2001; Nonaka & Takeuchi, 1995).

Learning is regarded as a process of establishing relatively permanent changes in an individual's knowledge, skills and attitudes, or in one word: in someone's *competences*. Learning can either be deliberately sought after, or occur in a spontaneous, unintentional way. But in all cases, the learner has an *active* role in absorbing information and using it to build new knowledge, increasing his or her own level of competence. It is highly self-regulated. By activities such as experimenting, problem-solving and critical thinking, the learner creates meaning and thereby expands his own existing body of knowledge, which is *unique, subjective, and to a large degree tacit* in nature (a.o. Nonaka & Takeuchi, 1995; de Jong, 1999). Given the right circumstances, learners are able use the newly acquired knowledge to *change their behaviour*, for instance to achieve better work results or otherwise reach their objectives). Since people also *learn to learn* as they learn, learning results may include

an increase in someone's learning ability, resulting in more effective learning processes in the future (Bolhuis & Simons, 1999; Scheerens, 1997). Learning is also considered to be a highly *social* process: essential activities for learning, such as sense making and testing assumptions take place in interaction with others (Jonassen, 1991; Scheerens, 1997; Van der Sanden, 2001).

Formal and informal learning

Learning differs regarding the degree of organisation of the learning process. This is reflected in the often-used dichotomy between informal and formal (or formalised) learning. Informal learning situations are those in which the learning process is not structured to a great degree (or not at all). Informal learning very often occurs unintentional, spontaneous, as an unintended by-product of working. But *intentional* informal learning (that is: situations in which work is deliberately used as a source for learning) is also an important category.

By contrast, formal learning refers to a setting specifically *designed for* learning, the most obvious example being a training. Important to realise is that the formalisation of learning not only refers to the level of organisation of the learning process, but also to the context of learning: is the environment in which the learning occurs specifically designed for learning or not? In the most informal types of learning, the work process is dominant, the setting is not specifically designed for learning, but for working (but learning occurred anyway). By contrast, in the most formalised types of learning, the setting is specifically created for learning (a classroom for example).
Formal and informal learning are not so much two separate categories. Rather, they can be considered to be extremes of a continuum. The border between the two is not fixed, but gradual, there are varying degrees of organisation of learning situations (see i.e. Kraayvanger, 1995; Onstenk, 1995; Van Onna, 1985). Onstenk (1996) uses the following minimum criteria in order to be able to speak of formal learning:

- Formulation of learning objectives;
- Organisation of the learning process;
- Demarcation in time: learning takes place in a specified time-frame.

It seems only logical to add to this list two criteria formulated by Van der Klink (1999):

- Evaluation of learning goals in some way;
- Provision of support for learning (material or social resources).

But with this minimum in mind, still very many different forms of more or less formal learning are possible.

Formal learning is an important tool for developing new competences. Research has shown that employees themselves regard informal learning and training as complementary. They consider both to be indispensable (Warmerdam & Van den Berg, 1992). This can be explained by the fact that both have different strengths and

weaknesses, and are suitable for acquiring different types of skills and knowledge. For instance, formal learning activities off-the-job provides opportunities for reflection on day-to-day problems, and offers possibilities to obtain generic knowledge and skills. Both kinds of opportunities are more limited in the case of informal learning in the workplace.

On- and off-the-job learning

When considering formal learning situations, it is important to distinguish between on-the-job and off-the-job learning. This dichotomy is more complicated than might be obvious on first sight. Should 'on-the-job' learning be limited to the actual, physical work place, that is: the place in which employees perform tasks that are part of their job, be this behind a machine, conveyor belt, desk or even at home? Or is it also possible to speak of learning 'on-the-job' when an employee learns by solving an actual work problem in a classroom or conference hotel? In such instances, the employee does 'work', but outside of the everyday work place (Van der Klink, 1999). Several authors argue that the distance to the physical work place is no longer a suitable feature in order to classify a learning situation as occurring on- or off-the-job. Developments such as the use of realistic simulations, and the use of real-life problems in training situations make it an inadequate criterion. Van der Klink suggests using *similarity* between the learning situation and the work place as a criterion for distinction, meaning the degree in which the learning situation represents the conditions and features of the actual work place (Van der Klink, 1999). This criterion is also adhered to for this study, with the annotation that a learning situation is only classified as 'on-the-job' if the conditions under which an employee learns to fulfil a task are completely similar to those in the work place (see Pieters, 1994 in Van der Klink, 1999). It should be noted that by far the biggest share of on-the-job learning situations are located in the actual work place, only a small fraction is created somewhere else.

Implications for supporting learning

Notions from the constructivist view of learning have profoundly changed the ideas on how to support learning and how to build learning environments, both within schools and work organisations. Teaching is regarded as a process of guiding (groups of) learners in the development and construction of knowledge, rather than transferring knowledge to them. More important than 'teaching' is creating a 'rich landscape' of possible learning situations within which learners can manage their learning processes. In general, main constructivist principles for creating learning environments are (e.g. Jonassen, 1994; Kerka, 1997; Duffy & Cunningham, 1996):

- Learning is an active process of 'sense making' and knowledge construction; therefore the learner has an active role (rather than a passive role as a 'sponge', absorbing information). Learning activities support and invite active creation of new knowledge (e.g. discovery learning, problem-solving) and the trainer is primarily a facilitator, coach and even co-learner;

- Motivation is crucial to learning, therefore learners are encouraged to take on learning activities they find relevant and engaging, and are also stimulated to build their own capacity in building their own motivation. Trainers, coaches and other people involved in supporting the learning process try to help learners in building motivation;
- Learning is a social process, therefore opportunities are created for learning in collaboration with others, so that negotiation and testing of knowledge can occur;
- Learning is context-bound, people do not learn isolated facts: therefore learning activities are preferably authentic and 'rich' to allow for integrated competence development (e.g. project-based learning, cognitive apprenticeships, case based learning,…);
- Learning ability is increased through learning, therefore by reflecting on the learning process, learners are helped to increase their learning skills.

The perspective on learning, and on learning environments, as described in the above, has several implications for how support for learning can best be provided within a corporate context. The issue of providing support can be considered on two levels. The first level is that of the *learning activity*. Principles for supporting learning, such as mentioned in the above can be used to develop or design a specific learning activity, such as a course. But in this PhD-thesis, the focus is not on the individual learning activity, but rather on the *system level*: how can we build a supportive environment for learning within self-managing work teams, in a structural way? Or in other words: how can we design the learning function, or the HRD function (that is: all tasks, people and procedures related to supporting learning, cf. Thijssen, 1988). This is a much more general perspective.

4.1.2 HRD function

The perspective held on learning within this study is closely related to the upcoming view on learning within work organisations, in which learning is considered as an active, self-directed process, closely linked to work activities, that can occur either on- or off-the-job and be either more formal or more informal in nature. Together with altering notions on learning, ideas on how to support learning are also changing. In turn, this is reshaping our ideas on the learning function, or HRD function, within work organisations.

Whereas the HRD function used to be considered as primarily a 'training function', a - sometimes relatively peripheral - subsystem of the organisation that could be readily identified, it is now increasingly seen as a more diffuse subsystem, intricately woven into the organisation as a whole. The focus is shifting from 'training' to 'learning': more and more attention is being paid to creating organisations which provide room for learning continuously, on- and off-the-job, in both formal and informal settings (Bolhuis & Simons, 1999; Garavan et al., 1999). And next to HRD

professionals, employees and managers play an important role in supporting and promoting learning (see also Barham & Rassam, 1989 for an analysis of the development of HRD functions). This approach to learning within organisations is reflected in current notions such as the 'learning ecology' (Stamps, 1998), the corporate curriculum (Kessels, 1995), the 'qualifying organisation' (Zarifian, 1995 in Onstenk, 1997) or the 'teaching firm' (Stamps, 1998) and in some approaches of the 'learning organisation' concept (e.g. Watkins & Marsick, 1993). Bierema offers the metaphor of the learning tapestry, to explain the entangled nature of learning and other organisational activities:

> 'Learning is a thread that weaves throughout the organisational system. It is always intertwining its way through the system, although often ignored, erroneous or not shared. (..) Learning will not have leverage in the organisational system until it moves from being an adjunct activity to one that is seamlessly woven into the organisational fabric.'
>
> (Bierema, 1998, p. 86)

From isolated to integrated business function

Though the situation differs for different countries and different business sectors, in general, employee learning is taking on a more strategic meaning for companies. It is considered to be an essential condition for realising business objectives such as customer focus, innovation and flexibility (Tjepkema et al., 2002). As a result of the strategic meaning of employee learning, HRD is becoming more of an integrated business function, with the focus broadening from 'training' to 'learning' (Hargreaves & Jarvis, 1998). As Horwitz states:

> 'Traditional approaches to HRD are insufficient to meet the changing needs of the contemporary organisation. There is a critical need to move from providing a narrow technical skills base to acquiring competences in an ever-expanding range of skills. (..) A key focus of Strategic HRD is the creation of a learning environment and structural design, which promotes learning and development for performance improvement and competitiveness.'
>
> (Horwitz, 1999, p.188)

Exaggerating slightly, traditionally, HRD (or corporate training & development) used to operate mainly as a reactive business function, relatively isolated from core organisational strategies, with a strong emphasis on eliminating well-defined skill deficits: adjusting employee qualifications to (new) demands of the production process and/or tasks and functions (Barham & Rassam, 1989; Van der Krogt, 1990; Van der Krogt & Warmerdam, 1997). The training function was characterized by a strong reliance on formal training programmes (on-the-job as well as off-the-job) and a dominant role of training professionals in analysing learning needs, formulating training plans, designing and delivering training. Employees fulfilled a mainly passive role, as 'consumers' of training.

This approach has several disadvantages - such as: difficulties in transfer of learning, and moderate effectiveness of training programmes, difficulties in responding timely to new learning needs - which in itself served as a driving force to change (Rothwell, 1996). But a very important reason for reconsidering the training, or HRD function, is posed by current organisational changes. Developments in the work system demand changes in the learning system in order to ensure an optimal match. The traditional HRD model does not fit very well with issues such as the learning organisation, self-management, innovation and flexibility. As Onstenk puts it: a reorganisation of work (e.g. more teamwork, greater responsibilities for employees) demands a reorganisation of learning (Onstenk, 1996).
So, in the slipstream of current changes in the organisation of work, ideas about supporting learning in corporate settings are changing (Van der Krogt, 1995; Poell, 1998). Nowadays, it is becoming less and less appropriate to speak of a 'training function', the current perspective sees the HRD function as much more closely integrated in the organisation. As Barham & Rassam describe it:

> 'It is [an approach] in which training is part of the lifeblood of the company, rather than being seen as a luxury or a dubious accessory.'
>
> (Barham & Rassam, 1989, p. 122)

Continuous learning by individuals is regarded a necessity, and as part of the firm's competitive strength. Both off-the job training and work itself are regarded as opportunities to learn. In this approach, there is no '*artificial distinction'* between work and learning, but it is recognised that most people are learning all the time. Support is considered to be necessary for a wide range of learning activities, from formal off-the-job training to informal learning on-the-job (Barham & Rassam, 1989). In order to support continuous learning, it is important that the learning function also integrates with the organisation. As Marsick & Watkins (1993) state: learning should not be organised or regarded as a parallel function, as the training function very often does now. Van der Krogt (1995) uses the concept of 'learning system', which together with the 'labour system' forms the organisation. Both systems are interrelated and mutually influence each other.

In this approach, line managers are more often actively involved in selecting and designing training activities, and in supporting learning in the work place (e.g. Horwitz, 1999; Marsick & Watkins, 1993; Tjepkema & Wognum, 1995; Tjepkema et. al., 2002). Workers are increasingly expected to take an active role in their own learning and development. In part because companies need active and motivated learners to fuel organisational learning processes, but also because of the end of lifetime employment, which makes it important for individuals to take charge of their own careers (e.g. Ratering & Hafkamp, 2000; Rothwell, 1996; Van der Waals, 2001). In this new constellation, HRD professionals should not function (solely) as trainers. Instead, they are expected to fulfil the role of consultant to management, helping them in selecting and organising learning experiences, and in creating favourable conditions for learning in the workplace (Barham & Rassam, 1989; Poell, 1998; Tjepkema & Wognum, 1995; Tjepkema et al., 2002).

4.1.3 Introduction of a learning infrastructure

So, the 'new learning' philosophy and organisational changes reshape current views on HRD. In the upcoming approach, support for informal learning is regarded as an important and integral part of the 'learning function', because learning and working are closely linked; and management and employees are important active partners. In order to describe and study support for learning within of self-managing work teams in this study, the notion of a 'learning infrastructure' was developed, which can be seen as an effort at a concrete articulation of this new HRD approach.

Building on the concept of training function, as defined by Thijssen (1988), the learning infrastructure of a self-managing work team consists of the support for all types of learning activities by team members (unintentional and intentional informal on-the-job learning, formal on-the-job learning and formal off-the-job learning), and the tools and people involved in providing this support.
As Simons (1999) points out, a really 'powerful learning environment' offers a well-balanced mix of three different types of learning:

- Training, or formal learning;
- Action learning (intentional learning, in the workplace, for example learning projects);
- Experiential learning (learning as an implicit, spontaneous and unintentional by-product of working).

Therefore, all three are included in our perspective of the learning infrastructure. In this sense, the notion of a learning infrastructure differs from other HRD models, or models for supporting and organising learning, that usually focus strongly on either formal training (e.g Hargreaves & Jarvis, 1998) or on (informal) workplace learning (e.g. Dewulf, 2001; Matthews, 1999; Poell, 1998; Ratering & Hafkamp, 2000).

Including support for informal learning makes the *nature* of the learning infrastructure radically different from the traditional notion of a training function, since this type of support is very different from training related activities, and can also not be organised in the traditional way. For example, it is more difficult to predict and plan support for informal learning, in the way that training plans are usually made. For supporting informal learning, the work place is influenced to create positive *conditions* for learning, for instance by increasing opportunities for cooperation. So, the 'learning infrastructure' of self-managing work teams contains a broad spectrum of initiatives, from targeted training interventions to dividing tasks in such a way that team members are challenged to learn on-the-job. Therefore, next to specialised HRD staff, managers and employees are very active partners in the learning infrastructure. And learning-related tasks are sometimes hard to distinguish from work- or managerial activities.

In this way, a learning infrastructure is closely intertwined with the organisation as a whole, it is not such a clearly observable subsystem as the traditional training

function (in systems terms, it is an aspect system, rather than a subsystem: cf. De Leeuw, 1982). As such, the idea of a 'learning infrastructure' somewhat resembles the notion of a 'learning network', as developed by Van der Krogt (1995). The difference between the approach in this study and the learning network theory, is that the latter is highly process-, actor- and relation oriented. While the idea of a learning infrastructure tries to 'capture' the entire 'configuration' for learning (not only people, but for example also systems and tools).

A learning infrastructure can also be compared to the notion of a 'learning ecology', as developed by Stamps (1998). Rather than being a clear and separate business function, such as the traditional training function, the learning infrastructure can be considered as a naturally developed system. Like an 'ecology', a learning infrastructure is a dynamic organisational system, existent in any organisation, even if it is not explicitly recognised.

A main challenge faced when building the framework for a learning infrastructure was to find an organising principle, a means to distinguish and categorise all of the support for learning. Key characteristics that are used to describe training functions within the more traditional perspective, such as training policy, training programmes, tools and training staff (e.g. Hargreaves & Jarvis, 1998; Tjepkema & Wognum, 1999; Van der Krogt & Plomp, 1987) are not applicable here. These traditional characteristics all reflect a higher level of structure and organisation than is appropriate for the idea of a learning infrastructure, and are more suited to describe a training function primarily oriented towards formal training activities, rather than support for informal learning. Newer models for informal workplace learning were also not used, since they too do not provide an integral perspective (including both formal and informal learning opportunities).

It was decided to use learning activities as the 'backbone' of the model. As mentioned earlier, learning activities refer to (mental) activities people undertake in order to influence the learning process. The following activities were distinguished (based on Knowles, 1978; Van der Sanden, 1993):

1. Learning activities: activities through which learners purposefully or by chance develop new competences and / or activities related to creating situations in which they are able to acquire these competences. These activities can be more or less formal, and they can occur on- or off-the-job.
2. Regulatory activities:
    - Identifying learning needs: activities through which learners clarify what additional competences they need to develop in order to realise the desired level and type of performance;
    - Determining learning outcomes: activities by means of which learners assess whether new competences have been developed and /or whether these competences lead to improved performance;

- Managing the learning process / personal development: activities through which learners manage and monitor their own process of competence development.

In line with the 'new learning' philosophy and the self-managing team concept, it seems appropriate to expect an active role of learners, not only in acquiring competences, but also with regard to the so-called regulatory activities: identifying learning needs, assessing learning outcomes and managing the learning process (see also Poell, 1998; Ratering & Hafkamp, 2000; Simons, 2001; Van der Waals, 2001). Support is needed for those activities too, and not only for the actual 'learning activities' in a narrow sense (competence development), therefore, they are explicitly included in the model.

A literature study was conducted to analyse each of these learning activities in more detail. First we discuss the actual learning activities: informal learning, in section 4.2, and formal learning in section 4.3. Then, the regulatory activities are described, in section 4.4. Section 4.5 provides an overview and presents the tentative framework for the learning infrastructure.

4.2 Informal workplace learning

As mentioned before, we can distinguish between formal and informal learning situations, as two extremes of a continuum. This section looks specifically into informal learning within self-managing work teams. First, the nature of informal learning is explored in subsection 4.2.1. The discussion is limited to informal learning *on the job*. Of course, much informal learning also takes place off-the job, in a workers' private life, for example, but this type of learning is considered too wide a category to consider here. Then, self-managing work teams are analysed as environments for informal learning, in subsection 4.2.2.

4.2.1 Informal learning

Informal learning situations are those in which the learning process is not structured to a great degree (or not at all). Informal learning very often occurs *unintentional*, spontaneous. Important to note is especially the unintentional, informal on-the-job learning. This can be defined as 'implicit learning that takes place during work and during co-operation with and learning from others in the workplace'. Learning more or less occurs as a 'by-product' of other activities (Onstenk, 1994; Van Onna, 1985)[ii]. Learning needs are not determined on beforehand. But this does not mean learning is not an important goal in itself. As discussed earlier, certainly within the context of self-managing work teams, learning and working go hand in hand: employees are expected to contribute to quality improvements and problem solving to ensure an optimal flow of the work process (see also De Jong, 1997). In other words: 'learning' becomes 'work' (and employees become 'knowledge workers'), at least part of the time.

However, the workplace is also used by employees for *intentional* learning (Poell, 1998; Ratering & Hafkamp, 2000). For example, workers sometimes take on new tasks, with the intention that performing these tasks will offer them opportunities for learning, or will be beneficial for their personal growth. They use the new tasks as a learning opportunity (and thus deliberately turn a work situation into an -informal- learning situation). It could therefore also be called 'independent' learning or autonomous learning (Mehaut, 1994).

Though not all work places are equally conducive to learning, informal learning takes place in almost any job. Research by Warmerdam & Van den Berg (1992) and Cheetham and Chivers (2001) clarified important forms of informal learning. Table 4.1, on the next page, provides an overview. The examples are grouped and labeled in order to facilitate comparison, the classification does not reflect a rank order.

Both studies support the notion that informal learning not only occurs spontaneously, but also deliberately. Many of the forms of informal learning listed in the table are examples of *intentional* activities (e.g. obtaining explanation from a supervisor, going on excursion, networking with others…). Such learning is very self-directed in nature.

Another observation that can be made from the table is that other people also appear to play an important role in informal learning. Colleagues, supervisors, but also clients and others are all mentioned in the learning activities, for example as role models, teachers or mentors. But informal learning can also be a highly individual activity: people also learn by engaging in activities such as experimenting, reflection and looking up information.

Table 4.1 Typical examples of informal learning

Warmerdam & Van den Berg (1992)	*Cheetham & Chivers (2001)*
'Learning by doing'	
• Practising, experimenting with new equipment and work methods • Solving problems that occur during work • Fulfilling difficult assignments with coaching • Performing extra difficult jobs	• On-the-job learning
'Learning from information'	
• Looking up information in manuals, professional handbooks etc. • Looking through computer instructions	
'Learning from co-workers'	
• Asking colleagues for help / advice • Exchanging work experiences with colleagues • Watching colleagues / superiors perform a task	• Working as part of a team • Networking with others doing similar work • Use of a role model • Working with more experienced colleagues
'Learning by instruction / coaching'	
• Discussing work with a permanent mentor/coach • Explanation / instruction from supervisor or expert • (Fulfilling difficult assignments with coaching)	• Support from a mentor of some kind
'Learning from others'	
• Instruction from suppliers • Visiting professional exhibitions and fairs • Going on excursion, visiting other companies	• Learning from clients, customers, patients, etc
'Learning by training'	
	• Learning through teaching / training others
'Learning by self-analysis'	
	• Self-analysis and reflection

4.2.2 Informal learning in self-managing work teams

Though informal learning occurs in all work places, not all workplaces are equally conducive to this type of learning. For instance, Warmerdam & van den Berg (1992) found that the amount and nature of informal learning differed considerably for employees in different organisations, functions and different organisational levels. In general, they found that:

- employees with a higher level of education indicated more often than employees with lower educational levels that they learn new things during work;

- employees with a higher level of education stress self study and self training as means for learning during work; medium educated workers indicate mutual discussion and consultation as main sources for workplace learning, as do lower educated employees. For the latter category, instruction and guidance is also very important.

So, employees with a higher level of education learn more, and in different ways during work than employees with a lower educational level. Warmerdam & Van den Berg conclude that this is also a result of the differences in jobs carried out by both groups. Many forms of learning, especially: looking up information, trying out new things, looking for solutions to problems and taking on extra challenging tasks, depend very much on the job level of the employee. These occur significantly more frequently in higher-level functions (Warmerdam & Van den Berg, 1992).

Baitsch & Frei developed a framework to analyse 'the learning potential of workplaces' in general. The learning potential is defined as 'the likelihood that qualification processes will take place in any given work situation' (Baitsch & Frei, 1981; Van Onna, 1985; Onstenk, 1995). It is important to note that this is not a *static* feature of work places: the learning potential of a specific work place is different for different individuals (inter-individual variation); moreover, the potential can change for one single employee from time to time (intra-individual variation).

This section will first discuss the Baitsch & Frei framework for learning potential of work places. Then, the learning potential of self-managing work teams will be investigated, using this model.

A general framework for the learning potential of work places

According to the Baitsch & Frei-framework[iii], the learning potential of a work place depends upon three factors:

- Employee competence (i.e. learning skills);
- Employee motivation / willingness for learning;
- Opportunities for learning during work.

The first two factors are specifically related to the employee and are therefore also referred to as 'subjective' determinants of learning potential. The latter is job-related and is consequently sometimes referred to as the 'objective determinant of learning potential'. Below, all three elements of the framework are discussed in more detail.

Employee characteristics

With regard to employee capacity for learning, two factors play an important role. Firstly, someone's available competences, and secondly a person's learning skills. A person's *competences* not only influence the amount of learning opportunities he or she will encounter during work, but also whether an employee will be able to recognize and use those learning opportunities that actually arise (Baitsch & Frei, 1981). In other words: one *needs* knowledge in order *to build* new knowledge. It is not possible to assimilate new knowledge without having some structure developed

from previous knowledge to build on. Also of great influence is a person's self image. A positive self-image (related to the occupation) will stimulate employees to seize chances for problem solving or to take on challenging assignments, both of which open up new possibilities for new learning. Employees with a low self-esteem will tend to avoid these potentially powerful learning experiences (Onstenk, 1994).

Learning skills refer to the ability of employees to learn from experience. As discussed earlier, many people hold ideas and attitudes that hinder them in learning from experience, have 'unlearned' how to learn, or suffer from other learning 'barriers' (see chapter 2). Any inability to learn from experience is by no means exclusively related to a lack of intelligence. Learning from experience requires special skills, which are not always similar to those skills necessary to achieve academic success (Argyris, 1991). According to Downs & Perry (in Pearn et al., 1995) skilled learners:

- Take responsibility for their own learning, and are in general marked by an active attitude;
- Are able to differentiate between those matters that are necessary to learn by heart, those that require the development of insights and the ones that can be learned best by doing;
- Deliberately try to choose the most adequate learning strategy for each situation;
- Ask many, and well-focused, questions in order to ensure that they are on the right track;
- Deliberately seek feedback on their personal performance;
- Are aware of factors which might disturb their learning process and know how to prevent these factors from playing a (large) role;
- Are aware of their preferred way of learning and also know that this is not the same for everyone;
- Look forward to new learning opportunities with confidence.

Next to learning skills, such as these, a strong *motivation for learning* is also a prerequisite for using available opportunities for learning in the workplace. If people do not see the point of particular new competences for them, they cannot be forced to learn. Kessels (1995) argues that the ability to 'manage' one's personal motivation for learning and work is a very important learning skill. Motivation for learning can be explained by the *expectancy-valence* theory. Expectancy refers to the expectations an individual holds of being able to participate in and successfully complete the activity, while valence refers to the learners' feelings with regard to the intended learning result: does the learner attach value to what is to be learned? Does it matter to him or her? Together these two factors determine whether an employee is likely to participate in educational activities, and/or actively seeks out to discover and use opportunities for learning (Tuijnman & Van der Kamp, 1992). Both factors are determined by general employee characteristics, such as social background, civil status, age, school experiences etc. (Van Onna, 1985). But an organisational climate that is conducive to learning is also very important (Onstenk, 1994). In a culture with a strong focus on goals, and values and norms beneficial to learning and

experimenting in general (such as a tolerance for learning from mistakes and an appreciation of the importance of questions), employee motivation for learning will generally be larger than in companies without a favourable learning climate (for example: because mistakes are generally covered up or punished, and asking questions is associated with 'loss of face').

Opportunities for learning during work

Baitsch & Frei's model states that the opportunities for learning during work are particularly influenced by demands of the job and the amount of latitude in a job.

With regard to the first element: *job demands*, it can be said that a job should not be too 'easy'. If a job only appeals to a fraction of a worker's competences, this often results in 'de-skilling': an erosion of competences, because they are not used and practiced. Whereas work that demands the employee putting the greater part of his or her skills to use, invites and challenges the worker to practice and expand existing competences. On the other hand, a job should not be too demanding either, since this leads to stress. There is no general formula with regard to the adequate job demand, whether a job is too easy, too difficult, or just right, is an individual matter.

The second element, *job latitude*, relates to diversity and complexity of job tasks and opportunities for decision making (autonomy) (Onstenk, 1995; Van Onna, 1985). Learning by doing presupposes broad and complete jobs, i.e. jobs which comprise preparatory tasks as well as tasks involving execution, control and monitoring of the work process. Equally significant in this respect is that the job involves tasks for which existing procedures and routines do not (entirely) suffice (anymore), malfunctions which should be corrected and new products, techniques and equipment to be used. In other words: the employee has to encounter enough 'problem situations' which challenge current knowledge and existing routines in order to stimulate reflection on daily practices and innovative learning.
However, these problems only serve as learning opportunities if the worker has enough possibilities for decision-making and control with regard to work situation and solution of problems (empowerment). In cases where a high variation in tasks, or a high amount of 'problems' and challenging situations is *not* combined with a certain degree of decision-making authority, stress and frustration are greatly induced. The employee perceives opportunities for solutions to problems or general process improvements, but cannot act upon this knowledge (see e.g. Christis, 1993; De Sitter, 1994).

Job latitude can be enhanced by several measures (Baitsch & Frei, 1981): first by job rotation (the employee works in several work places) or job enlargement (the worker fulfils several tasks, instead of just one). This enhances variation and allows for the acquisition of new (operational) skills. Another option, job enrichment, entails that the employee's set of tasks is expanded to include not only operational, but also co-ordination and managerial tasks (planning, control etc.). This increases room for

decision-making. It is a qualitative, and not just a quantitative broadening of tasks, and as such has a more profound effect on the opportunities for learning in the work place, since it challenges and enables the employee to acquire a new set of competences (and not just more operational skills).

Next to the demands of work and the amount of latitude, other factors also influence opportunities for learning during work. Frei, Duell & Baitsch (1984) mention among other things: time constraints; work hours; the reward system and the social context of the work place (and related issues such as leadership and feedback). Research by Onstenk (1994) into opportunities for learning in the workplace pointed out the importance of two other groups of factors: characteristics of the physical workspace and of the social work environment.

First, the physical work space can contain several *material* resources which are helpful for learning, such as job aids, instruction manuals, self-instruction materials, books and magazines and computer simulations (Onstenk, 1994; Van der Krogt, 1995). Onstenk (1995) points out simulation and computer support as very effective material resources for learning. Since work, especially in manufacturing industry, is to an increasing degree automated and computerized, procedures and working methods become more and more formalized. This changes the nature of work: instead of activity oriented (concrete) the work focuses more and more on checking, monitoring and optimising the system (abstract). Onstenk suggests that the instruments used for this can also be applied as learning tools. For instance, some process software offers the possibility of a virtual 'test run' enabling the employee to explore what the effect will be of certain proposed changes in machine settings.

Next to these material resources, '*social*' resources for learning are considered indispensable. Experienced colleagues and supervisors can support learning processes by coaching, providing explanation, giving feedback and advice, assisting in problem solving processes and by creating positive conditions for learning etc. (Onstenk, 1994; Van der Krogt, 1995). Warmerdam & Van den Berg (1992) distinguish between support aimed at 'managerial conditions', such as time for learning and task variety, and at didactic/pedagogic conditions, such as instructions from a mentor or feedback from a team leader.

The learning potential of self-managing work teams

When analysing self-managing work teams as a work environment through the lens of the Baitsch & Frei-model, it can be concluded that – in theory at least - the number of learning opportunities inherent to jobs in self-managing teams should be quite large. According to this model, the amount of opportunities for learning in the workplace are largely determined by job characteristics (such as job demands, job latitude) and work environment characteristics (physical work space and social work environment).

Onstenk (1996) concludes that jobs in self-managing teams are typically:

- 'Rich' jobs, as a result of task enrichment, task enlargement and a considerable amount of latitude and employee responsibility (empowerment):
  Task enlargement offers more possibilities for building and expanding operational competences of employees (multi-skilling), for instance by job rotation. Task enrichment allows employees to develop higher-level qualifications (such as problem solving). Increased worker autonomy causes the work to become more 'problem-rich'. Problems, for instance in the field of production planning, that were previously faced and solved by management are now the responsibility of the team itself. Moreover, since it becomes a collective responsibility of the team as a whole, team members stimulate each other to find high quality solutions and improve performance. This can become a conducive factor for learning. Unfortunately, it can also stifle learning when the pressure of team members becomes to large.
- Characterised by opportunities for working together with colleagues:
  As employees work closely together with other team members, feedback, explanation and advice from these colleagues can enhance learning. Especially in those cases where team members work together with (staff) experts in fields as quality and maintenance, this provides them with opportunities to learn from these specialists. So the opportunities for social support are quite high.

So, the general job characteristics and features of the social work environment are favourable for learning (as was already mentioned in chapters 1 and 2). Of course, this is not a coincidence. Self-managing work teams are deliberately designed to enhance possibilities for learning during work. In self-managing work teams learning is regarded as a part of everyday work, since tasks as problem solving, quality and maintenance become part of work.

However, in considering the learning potential of self-managing work teams, case study research has revealed a number of specific barriers which prevent teams from fully realising the learning potential of the work place (as mentioned in chapter 2). First, the rich jobs, resulting from the integration of planning, maintenance and quality control tasks with the operational work do not necessarily lead to more learning, as Onstenk (1993, 1996) observes:

- There is an inherent tension between 'work' and 'learning': teams sometimes choose to leave certain members in certain positions because they do the work adequately and very fast, whereas teaching a new person the same job would cause loss of efficiency; learning through job rotation or mutual support is often threatened by work pressure or shortage of staff;
- The role of the manager or team supervisor as coach and facilitator of learning does not always receive enough attention. As a result he or she is not always able to fulfil this difficult (and very different, and new) role adequately.

Secondly, the close cooperation with other colleagues does not always result in more or better social support for learning, for a variety of reasons (Onstenk, 1997):

- Supporting co-workers in learning is often not regarded as an actual task, which means there are usually few facilities and little time for such activities;
- In order to work efficiently, work teams sometimes make work arrangements in which some members perform only very simple tasks, while others concern themselves with more demanding aspects of the work, such as planning and co-ordination: in such cases, cooperation is reduced;
- Learning from each other places high demands on communication skills, co-operation and mutual trust. These conditions are not always met with in self-managing work teams. Especially in situations where team members have different backgrounds, this can stifle learning if barriers in communication are not overcome (on the other hand, a certain amount of variety is necessary to provoke learning from each other, if a team is too homogenous in nature, learning is not likely to occur either) (see also: Nonaka & Takeuchi, 1995; Nordhaug, 1995).

Next to these job related issues, individual factors also play a role. According to Baitsch & Frei, the likelihood of learning processes actually taking place (the *learning potential* of the workplace) also depends on individual characteristics, namely motivation for learning and employee competence, such as learning skills. This individual component sometimes also serves to reduce the learning potential of a workplace. Research indicates that employees with a lower level of training, and older employees often have fewer opportunities and encounter more obstacles to learning in their work (Onstenk, 1993; Warmerdam & Van den Berg, 1992). Because these are general issues, they also play a role in self-managing work teams.

Hence, specific attention for organisation and support of learning processes within self-managing work teams is justified, in order to optimise teams as learning environments. Merely increasing opportunities for learning will not automatically lead to more - or better - learning since teams and individual employees do not always use these opportunities (to the full extent) (Onstenk, 1996). Support for informal learning can greatly enhance employee learning in the workplace (Warmerdam & Van den Berg, 1992).

4.3 Formal learning on- and off-the-job

With regard to more formal types of learning, a distinction was made between formal learning on-the-job and off-the-job. Both are discussed below. It has to be said that little specific literature was found for self-managing work teams. The more general theories on training, however, provide some valuable insights.

Formal learning on-the-job

Training on-the-job is defined by De Jong (1997) as[iv]: activities, aimed at enhancing employee capacity for certain work-related tasks, using:

- The work process (the actual performance of productive tasks);
- The social work environment (colleagues, management);
- The physical work environment.

With this broad definition, De Jong deliberately includes a broad range of on-the-job training processes, from instruction of a set of strictly defined, narrow tasks to the concurrence of work and learning (processes in which employees and managers add value by finding innovative solutions to existing problems). In general, training on-the-job is defined in a less all-inclusive way. Some authors use the prefixes 'unstructured' and 'structured', or 'planned' in order to indicate the amount of 'formalization' of a given training process (see for an overview De Jong, 1996). But in general, the term *training* is reserved for those learning activities that are planned and organized. Onstenk, for instance, defines training on the job as:

> 'organised, structured, intentional forms of learning in the work place, characterized by purposeful pedagogic / didactic measures, which uses work as a place for learning'
>
> (Onstenk, 1994, p. 9)

The terms *organised, structured* and *intentional* specify some degree of formalization of the learning process, but still leave room for variety with regard to the actual amount of structure of the learning process.

As can be ascertained from the above, both definitions stress different aspects of formal on-the-job learning, and are therefore complementary to each other. Onstenk's definition clearly points out the organized character of formal learning, while De Jong's description is very complete with regard to the workplace characteristics that can be used in formal learning (the work process, the social work environment, the physical work environment).

Next to the degree of structuring and organisation of the learning process, another difference with informal learning in the workplace is that the focus in on-the-job training is completely on learning; the employee does not make a contribution to productivity at the time of the instruction (Matthews et al., 1992).

As to the form of on-the-job training, different types can be distinguished. Typical examples are (De Jong, 1991; 1997):

- On-the-job *instruction*: systematic step-by-step method of passing on skills on the basis of a task analysis. The tasks to be learned are divided into small steps, which are subsequently practised by the employee till performance is faultless ('practice and drill'). An instructor explains and shows the employee how to fulfil the task, encourages the employee to practice, checks if the employee makes no mistakes and provides feedback.

- On-the-job *study*: employees actively explore the tasks to be learned by carrying out specific training exercises which have been developed on the basis of a task analysis. A learning facilitator provides support and feedback. Responsibility for learning rests more with the employee than in the case of on-the-job instruction.

Formal learning: off-the-job training

The importance attached to workplace learning (either informal workplace learning or on-the-job training) within self-managing work teams, does not mean that off-the-job training opportunities are considered not important. On the contrary, they are seen as an important element in the learning infrastructure of self-managing work teams.

The main benefit of training in a classroom or some other place, is that it occurs away from the daily work environment[v], in an environment specifically designed for learning. It provides learners with the opportunity to withdraw themselves from the day-to-day realities of work, and gain new insights by reflection or by studying general theories. Off-the-job training programmes differ with respect to most on-the-job learning activities (either formal or informal), in that they can be both short-term *and* long-term oriented. Most workplace learning has a practical and short-term focus. Off-the-job courses can be used for those learning needs that - for whatever reason - require more time, or more distance to the day-to-day work environment. For instance, courses aimed at someone's future career opportunities. Other reasons for choosing off-the-job training as a form of learning include factors such as a high risk and high costs of training in the work place, and a need to prepare workers before work (e.g. training jet pilots). In this respect, off-the-job training activities constitute a useful addition to informal learning activities (see also section 4.1.1).

But this strong point of off-the-job training is at the same time its main drawback. The distance between work and training can become so great that the training no longer has any effect on employee performance in the workplace. This has become known as the *transfer* problem of training (Tannenbaum & Yukl, 1988). To an increasing degree this transfer problem is a reason why companies search for ways to bring training closer to the workplace (Van der Klink, 1999). This leads to more on-the-job training. But trainers also are increasingly creative in finding ways to bring the workplace into a predominantly off-the-job training programme (for instance by working on cases that employees choose themselves from their own actual and current work practices) (Tjepkema & Wognum, 1995).
Because of the benefits and drawbacks of both, a combination of more informal learning and training is most suitable (Matthews et al., 1992). In this respect, the *relationship* between formal training and learning in the workplace is worthy of specific attention:

> 'Training needs not only to prepare workers for new tasks, but also for learning at the workplace as an on-going process. The new organisation is characterized by continuing change and improvement. In that

> connection, (internal) training should be increasingly regarded as a continuous process. Precisely because of their non-incidental nature, a combination of courses (tailored as much as possible to the workplace) and learning at the workplace and the interaction between them assume central importance.'
>
> (Onstenk & Voncken, 1996, p. 61)

The objective of bridging the gap between learning and working, and the aim to prepare workers for learning in the workplace lead to:

- An increasing use of training methods which develop learning skills in employees;
- Training programmes which use real-life problems and examples from trainees (so that, in a sense, the workplace is brought into the training);
- 'Blended' learning programmes in which learning in the work place and formal off-the-job moments alternate each other (e.g. Action Learning).

With regard to *forms* of off-the-job training, the list of possibilities is endless. From outward-bound team activities to individual management training programmes for the team leader, and from word processing courses to team communication workshops.

4.4 Regulatory activities

Another important category of learning activities to consider when supporting learning within self-managing work teams, is that of the regulatory activities: identifying learning needs, assessment of learning outcomes and management of the learning process. If workers fulfil an active role with regard to their own learning, they probably also need support for these activities. Each of these learning activities is discussed in the subsections 4.4.1 through 4.4.3.

4.4.1 Identifying learning needs

Learning needs represent a gap between current and desired competences (or competence levels). Identifying learning needs is the activity by which team members clarify what competences they need to develop (further) in order to realise the desired level and type of performance (e.g. Knowles, 1978). An accurate assessment of learning needs enables a conscious and deliberate use of learning opportunities, both in the workplace and off-the-job. It helps to choose an adequate learning strategy, and is therefore very important.

Learning needs can be very varied. Working in self-managing work teams typically places more demands on team members than working in a traditional setting. Some authors even include the relatively high level of requisite skills of team members in their definition of self-managing work teams. For example: Ray & Bronstein (1995) speak of 'a group of interdependent, *highly trained* employees who are responsible for

managing themselves and their work'. Of course, the necessary competences depend on the actual objectives or problems in any given situation; therefore it is impossible to provide a comprehensive overview. However, in general, competences of members of self-managing work teams can be divided into three categories:

- *'Operational' competences*: These are the knowledge, skills and attitudes necessary to fulfil operational tasks. These are typically broader than in conventional work settings: members of self-managing work teams have to be multi-skilled, since they are required to fulfil a variety of tasks within the team (which increases team flexibility and allows for job rotation). Moreover, since a self-managing work team fulfils 'regulatory' tasks that were previously carried out by management or staff members, operational competences for team members typically also include skills and knowledge with regard to - for instance - maintenance and re-adjustment of machines and equipment and planning and organisation of work (Fousert, 1996; Onstenk & Voncken, 1996; Wellins et al., 1991).
- *Social competences*: In order to be able to function effectively in team, a broad range of communication and social skills are needed, such as active listening, providing feedback, ability to resolve conflicts and the ability to participate effectively in meetings (Fousert, 1996; Wellins et al., 1991; Onstenk & Voncken, 1996).
- *Improvement/learning competences*: A major difference with traditional work settings is that self-managing work teams are not only responsible for carrying out a specific part of the production process, but are also expected to make improvements and ensure alignment with other parts of the company (e.g. other teams). In order to be able to do so, specific competences in the field of process and product (or service) improvement are needed. For instance, team members need a broad view of the organisation and organisational performance, and knowledge of aspects such as: customer demands, suppliers of raw materials and resources, logistic processes, financial processes and the operations of different departments (such as internal clients) (Fousert, 1996; De Sitter, 1994). Moreover, team members need knowledge and skills in the fields of learning and quality improvement. Examples of these are learning skills, techniques for process analysis, process improvement, problem solving, and (quality)project management (Wellins et al., 1991).

Competences in all of these areas are needed to perform adequately within the context of self-managing work teams. This general overview merely serves to provide a broad idea of the content of possible learning needs of individual team members. The actual content varies widely, depending on the type of work to be done by the team (e.g. processing an insurance claim or assembling a car), and the experience of team members. The actual need for learning can only be determined by means of analysis of available competences of a specific employee and demands of the specific situation.

However, workers not only have learning needs with regard to a present situation, or a current job, but also with regard to future roles or jobs, or even with regard to

their employability in general. In this respect, a distinction between short-term and long-term learning needs (sometimes referred to as development needs) can be made.

4.4.2 Assessment of learning outcomes

Assessment of learning outcomes is an activity in which team members evaluate whether they have developed new competences, and/ or that these new competences result in a higher level of perfomance (e.g. Knowles, 1978). Assessment of learning is especially relevant in the case of learning situations that were deliberately chosen or developed in order to resolve a certain learning need. It is important to determine whether these were effective. But also in the case of informal learning, reflection on learning outcomes is important, in order to assess what was learned during a particular period of work.

On the evaluation of learning results, no specific literature was found for self-managing work teams. The more general theories in this area indicate that outcomes of learning processes can be distinguished on several levels (Kirkpatrick, 1975). First, learning may result in the development of new competences on the part of the learner (the competence level). Secondly, as a result of these competences, job performance may improve (the performance level). Of course, outcomes on the competence level are mostly intermediate results. Improvements on the level of performance are usually most important (improving competence is a means to an end). When judging the effectiveness of the support provided to the team with regard to learning, the outcomes on the performance level are more important than those on the competence level. However, both are relevant. Eventually, it is even possible to define outcomes of learning processes on even higher levels, such as the level of team or organisational results, but this is very difficult.

4.4.3 Management of the learning process

Following the principles of self-directed learning, an important regulatory activity is the management of the entire learning process. This is an activity (or a set of activities) by which team members monitor and direct their own processes of competence development (e.g. Toracco, 1999; Knowles, 1978).

Case research seems to indicate that learning and development in self-managing work teams is regarded mainly a responsibility of team members and of the team leader (Onstenk & Voncken, 1996). Decentralisation of training responsibilities and an active involvement of line managers and employees in training is not unique for self-managing work teams. It is more of a general trend (Onstenk & Voncken, 1996; Raper, Ashton, Falstead & Storey, 1997; Warmerdam & Van den Berg, 1992) but is especially relevant for organisations implementing self-managing work teams. Given the 'self management' philosophy, it is only logical to decentralise HRD

responsibilities, along with other supportive tasks in fields such as quality management and maintenance. Team members themselves play an important role in determining learning needs, designing and providing learning situations and assessing learning results. Line managers (most importantly team leaders) are considered to play an active role in facilitating and supporting informal learning, and supporting employees in training-related activities. The HRD professional attains the role of specialist consultant who supports managers and employees in tackling learning / training problems (based on research by Onstenk & Voncken, 1996; Raper et al., 1997; Poell, 1998; Tjepkema & Wognum, 1995 and Tjepkema et al, 2002).

4.5 Learning infrastructure: a tentative framework

The central objective of this study is to clarify ways in which learning within self-managing work teams can be supported in a structural way, by building a framework for the learning infrastructure. A tentative framework is presented in table 4.2.

Table 4.2 Activities of learners and the learning infrastructure: tentative framework

Activities of learners		*Learning infrastructure*
Learning activities	• Informal learning in the workplace: unintentional & intentional	• Social support • Material support
	• Formal learning: on-the-job & off-the-job	• Social support • Material support
Regulatory activities	• Identifying learning needs	• Social support • Material support
	• Assessing learning outcomes	• Social support • Material support
	• Managing learning process	• Social support • Material support

The left hand column of the framework represents *activities of learners*. These are taken as the 'backbone' of the model: the way to conceptually organise and distinguish support for learning. Two basic types of activities are distinguished: 'learning activities' in the most direct sense of the word and so-called regulatory activities.

1. Learning activities: activities through which team members - purposefully or by chance -develop new competences. A distinction is made between:

- Informal learning in the workplace: rather unstructured learning processes, that occur either spontaneous (unintentional) or deliberately (intentional).
- Formal learning: learning that takes place in a setting specifically *designed for* learning (some degree of organisation and structure of the learning process), either on-the-job or off-the-job.

2. Regulatory activities:
   - Identifying learning needs: activities through which team members clarify what additional competences they need to develop in order to realise their desired level and type of performance.
   - Determining learning outcomes: activities by means of which team members assess whether new competences have been developed and /or whether these competences lead to improved performance.
   - Managing the learning process / personal development: activities through which team members manage and monitor their own process of competence development.

The right hand column of the model represents *support* for each of these learning activities: the learning infrastructure. The basic idea underlying the model is that each of the learning activities can be supported by specific interventions, tools and activities. Together, these interventions, tools and activities will constitute a team's learning infrastructure (or 'support structure', as it was also called in the initial phase of the project).

With regard to support, a distinction is being made between material support and social support (Van der Krogt, 1990; 1995). Material resources include tools, budgets and materials for each of the four types of learning activities (Onstenk, 1994; Torraco, 1999; Wellins et al., 1991; Watkins & Marsick, 1993). For instance:

- Learning materials (e.g. job aids, training modules, EPSS, text books, self study materials,….);
- On- and off-the-job training programmes and courses;
- Tools for identifying learning needs (such as personal development plans);
- Instruments for evaluating learning outcomes (questionnaires, portfolios,…).

Perhaps more important than the material resources are the people who actually provide support ('*social resources*'): team leaders, team members and HRD professionals (Onstenk, 1996; Torraco, 1999; Mehaut, 1994). They choose and perform necessary interventions with regard to each of the activities, for example:

- Providing feedback on performance;
- Fostering a positive learning climate;
- Providing instruction and guidance on how to fulfil a task;
- Helping team members to identify learning needs;
- Fostering motivation and a sense of responsibility for learning.

The preceding sections already contained some examples with regard as to how learning and regulatory activities can be supported.

It has to be noted that the model is only partially built on literature that is specific for learning within self-managing work teams (in particular the section on informal

workplace learning is based on specific literature). More general literature on HRD and learning was also used. The most specific element of the learning infrastructure for self-managing work teams is probably: support for informal learning in the work place. Because, typically, opportunities for learning on-the-job are quite high in such teams. But this study does not want to consider only informal learning activities, formal training can also fulfil an important role in learning within self-managing work teams, and is therefore included in the framework.

As a next step, the framework needed to be checked and 'filled' with interventions and tools to support learning. To this end, group interviews were organised, and additional literature was collected. Results are reported in chapter 5.

5 Support and conditions for learning within self-managing work teams

This chapter explores and describes important elements in the learning infrastructure of self-managing work teams: how can learning in such teams be supported? Results are based on group interviews and a literature review. The chapter first discusses data collection strategies in section 5.1. Then, an overview of support for learning is provided. For each category in the framework, most important elements are discussed in sections 5.2 through 5.4. Section 5.5 discusses the organisation of the learning infrastructure. Section 5.6 summarises the main conclusions, presents a revised version of the learning infrastructure framework, and looks forward to the next steps in the study.

5.1 Data collection: group interviews and literature review

In order to 'fill' the framework of the learning infrastructure in self-managing work teams, a combination of group interviews and literature review was used.

Literature review

Literature was collected and analysed in two stages. First, during the construction of the initial framework of the learning infrastructure. In a sense, building the framework that was presented in chapter 4, can be compared to constructing a 'filing cabinet': deciding on the number of drawers and the label on each drawer. The next steps in the study were meant to fill this cabinet with ways of supporting and facilitating learning within self-managing work teams. Of course, while studying the literature for the original 'construction purpose', some materials for 'filling the drawers' was also found. This was even something that was explicitly sought after, because this also provided a preliminary indication of whether the categories were useful and valid (if they would remain entirely 'empty' during the literature search, there would be little hope of finding empirical data later on). Secondly, after the group interviews, additional literature was sought to validate interview findings and expand on them.

Group interviews

Next to the purpose of collecting data on support for learning within teams, the group interviews also served to validate the original framework. The question central to each of the group interviews was: how can learning within self-managing work teams be supported? As described in chapter 3, a total of 36 participants, with varying backgrounds, shared their experiences and theoretical notions with regard to this issue in three group interviews, which lasted one day each. Their exchange of ideas yielded a large number of important factors (internal and external to teams) that (can) support learning within self-managing work teams. An elaborate description of the interview set-up can be found in chapter 3. Only the headlines are repeated here.

In order to interview a broad group of respondents, three meetings were organised, with 10-15 participants each (a minimum of 15 participants were invited for each meeting). The interviews lasted one day each, in order to allow for sufficient time to exchange experiences and for in-depth discussion. In order to facilitate group discussion, a combination of *the critical incidents technique* (Ellinger & Watkins, 1998) and the *Metaplan method* (Habershon, 1993) was used.

In *preparation*, participants were asked to collect for themselves their main positive experiences ('critical incidents') in supporting learning within self-managing work teams. They wrote down each incident on a card in large print. Participants were also invited to identify main theoretical notions with regard to supporting learning in teams. In order to separate 'theoretical / general input' from 'practical / incident input' two different sets of coloured cards were used (yellow and green).

During the meeting, participants split up in three or four small groups to share experiences and cluster those where possible. These clusters were then compared and reflected upon in a plenary discussion. During this discussion, an attempt was made to fit the clusters of interventions, principles, experiences etc. into the general framework. This proved to be a challenging task. The categories in the original version of the framework pertained to different learning activities, such as identifying learning needs, creating and using learning opportunities, managing learning and evaluating learning results. Participants proved to use less specific categories themselves (e.g. just 'learning'). Moreover, the experiences they brought forward mostly supported more than one category in the framework. More often than not, the conditions and interventions were said to support several learning activities, or even learning within teams in general. Nevertheless, during the meetings, participants' input was categorized according to the original framework, by relating conditions, interventions and tools in the category that fitted best, and sometimes by including the same intervention in more than one category[i]. Participants also added new categories.

As a final step, general trends in the findings were discussed, and the input was prioritised. Which elements of the learning infrastructure were thought to be imperative and why (what theoretical arguments do we have, what practical evidence is available)?

Next to this agenda, that was kept the same for all of the meetings, three separate issues were discussed in only one or two of the meetings:

- Roles of the people involved in supporting learning (meeting #1);
- Quality and formalisation of the learning infrastructure (meeting #2, meeting #3).

These were issues that were considered to be important, but there was not enough time to address all of them in all three meetings, therefore they were divided over the different sessions.

Results from the group interviews and the literature review are described jointly in this chapter, according to each of the elements of the framework of the learning infrastructure. A separate summary of group interview findings can be found in appendix VI.

5.2 Supporting learning activities

With regard to supporting learning, a distinction was made between support for informal learning in the workplace, and for on- and off-the-job formal learning. Results for both are discussed in this section.

5.2.1 Supporting informal learning in the workplace

Interviews and the literature review yielded a wide range of possibilities for providing support for informal learning in the workplace within self-managing work teams. The input can be organised into two categories:

- Support for informal learning;
- Creating favourable conditions for informal learning.

Support for informal learning

The team leader is considered to play an important role in supporting informal learning 'hands on', both by interview participants, and in available literature (cf. Onstenk & Voncken, 1996 Poell, 1998; Raper et al., 1997; Ratering & Hafkamp, 2000; Tjepkema & Wognum, 1995 and Tjepkema et al, 2002). In general, *the team leader is expected to coach* team members, and in that sense, support them in learning (all meetings). One way of doing this is by *providing feedback* and *supporting reflection*, for example by organising meetings to reflect on the team's progress, or through benchmarking activities. A key factor in stimulating reflection is providing a 'point of reference' for teams, against which they can evaluate their current performance.

Participants from the group interviews reported positive experiences with activities (workshops, meetings) aimed at raising awareness of the team's position within the entire company, or organising contact with both internal and external clients (company visits).

Secondly, *support can be provided by team members*: learning from each other is considered very important by interview participants and is also stressed in several literature sources (cf. Onstenk & Voncken, 1996; Raper et al., 1997; Poell, 1998; Tjepkema & Wognum, 1995 and Tjepkema et al, 2002). Team members can foster each other's learning, for instance by providing feedback or helping out in solving difficult problems (all meetings).

Creating favourable conditions for informal learning

The types of support for informal learning listed in the above are all examples of 'direct' support: the learning process is enhanced by providing feedback for instance, or by providing information sources. But informal learning can also be supported in a more 'indirect' sense, namely by creating favourable conditions for learning. As discussed in chapter 4, conditions for informal learning in the workplace within self-managing work teams are – in principle - quite favourable. However, targeted interventions may serve to increase the learning potential of the workplace. These actions can either focus on optimising conducive factors for learning in the workplace - for instance by introducing job rotation, thus increasing task variety - or be aimed at eliminating barriers - for instance by safeguarding time for learning -. Presumably a combination of both (capitalizing on opportunities and eliminating barriers) will be most effective.

This type of support is sometimes referred to as '*pedagogical interventions' in the work environment*, aimed at acknowledging and further facilitating informal learning processes that perhaps already take place (Onstenk, 1994; 1995; 1996), and can be integrated into a team leader's regular tasks with regard to work assignment and the organisation of job support. The team leader plays a very important role in providing this type of support, but it appears that HRD professionals can fulfil a role in this respect, too. For instance by assisting the team leader in creating favourable conditions for learning (cf. Onstenk & Voncken, 1996; Ratering & Hafkamp, 2000; Raper et al., 1997; Poell, 1998; Tjepkema & Wognum, 1995 and Tjepkema et al, 2002).

Building a learning climate

The most important task for team leader in this respect appears to be: *building a learning climate*. In each of the three meetings, participants pointed out the importance of an atmosphere in which 'learning' and personal development is stimulated and invited. In the literature, several references were found as well (e.g. Onstenk, 1994; Klarenberg et al, 1996). A team leader's *behaviour* appears especially important in this respect. Participants warned that team leaders can only foster the

development of a learning climate if they 'walk their talk'. In other words, if they demonstrate the importance attached to learning in their own behaviour. The way in which team leaders themselves handle feedback for instance, sets an example for the team (either positively or negatively).
Interview participants mentioned several guidelines for creating a positive learning climate. For example, the team leader can foster the development of a learning climate by:

- Taking care not to 'punish' the team (member), whenever an (team) initiative fails, but rather opening up the discussion and analyse why things did not turn out as expected;
- Providing honest and constructive feedback on (team) performance;
- Planning moments for reflection;
- Not interfering to soon, 'allowing people to make mistakes';
- Fostering an atmosphere of mutual respect for each other, and a willingness to learn from each other;
- Creating a positive orientation, by focusing attention on those things that have been achieved and on future opportunities, rather than stressing missed opportunities, or unattainable goals.

Metaphorically speaking, creating a positive 'atmosphere' or climate for learning, was compared by interview participants to fertilising the soil in a garden. It is an essential basic activity, not to be skipped, but in itself not enough to actually create a blossoming garden. To achieve the latter, it is also necessary to plant trees and shrubs and to sow flowers. In other words: a positive 'learning climate' is indispensable, but in itself insufficient to turn a team into a rich learning environment. In order to really stimulate learning, more concrete actions are also necessary.

Interventions to increase opportunities for informal learning can be directed at each of the elements in the Baitsch & Frei framework for the learning potential of work places (see chapter 4). The most important ones, as found in the literature and mentioned in the group interviews, are discussed below.

Employee related factors: motivation and competence

A first 'entry point' for increasing opportunities for informal learning is to increase employee motivation for learning, thus increasing the chance that they will actively engage in and create learning activities. This deserves special attention, according to group interview participants (all meetings). They mentioned several examples of ways in which the team leader may enhance motivation:

- Creating a 'sense of urgency' for learning, by helping the team members discover the gap between the present and the future, or between the current level of performance and the desired level (e.g. by reflection or benchmarking exercises as mentioned earlier). Team members are more intent on realising improvements, once they have seen with their own eyes the possibilities and

need for improvement. But at the same time team leaders need to make sure this gap is not too wide. If the difference is too great, and goals seem unattainable, people tend to be discouraged, rather than motivated for change.

- Making sure that team members' tasks match their personal interests, thus increasing 'emotional' ownership of their own jobs and learning processes. If team members work on jobs they consider relevant, motivation for learning and improvement will increase. People find it easier to pick up new tasks, thus stimulating their own learning process and helping team performance at the same time. Emotional ownership of learning and development can be increased by a careful allocation of tasks (ensuring that people work on those things they think are worthwhile), and by paying attention to individual development needs. Maintaining a link between individual objectives and team targets is an ongoing challenge for team leaders in this respect.

Other options to increase employee *motivation* for learning, that were mentioned in the literature, include:

- Rewarding and paying attention to learning (Onstenk, 1996, Nordhaug, 1995). For instance by: performance interviews, performance rating systems, work meetings, create sufficient attractive career possibilities (Onstenk, 1994);
- Assessing employee learning and providing employees with certificates for skills learned in the workplace (Onstenk, 1994);
- Helping employees to overcome feelings of 'learned helplessness' (Onstenk, 1994).

Other possible interventions with respect to employee characteristics, found in the literature, are related to increasing team members' *capacity for learning*. Such interventions may focus on supporting employees in enhancing their learning skills, such as broadening people's repertoire of learning strategies or their capacity for asking for, and receiving feedback (Downs & Perry in Pearn et al., 1995; Onstenk, 1996). In theory, it is also possible to increase the opportunities for informal learning by increasing employees' communication skills and the capacity to work in less hierarchical, participation-based work settings (Onstenk, 1996). This will enable them to make more use of the existing learning opportunities.

Job characteristics

The more objective determinants of learning potential include job characteristics. By means of specific interventions it is possible to influence the workplace so that informal learning is facilitated.

Interview participants mentioned creating *opportunity, or 'space', for learning* (meetings #1 and #3) as a very important intervention. This was confirmed by the literature review. Room and freedom to experiment, to take initiatives and to learn from these experiences stimulates creativity within the team, an increases learning opportunities. This requires, among other things, *output management*, or 'management

by objectives', rather than a very strict process management. In the words of Garratt (1988), a 'hands off' manager, rather than a 'hands on manager' is important to create room for learning.

According to the literature, a very important strategy to increase learning is to increase task variety, by *multiskilling* team members. This is seen to have several advantages. Next to offering benefits with regard to the organisation (such as efficiency and increased flexibility in responding to work load fluctuations (Dunphy & Bryant, 1996; Molleman & Van der Zwaan, 1994; Wellins et al., 1991), this also increases conditions for learning, because:

- Employees retain a better overview of the production process, which enables them to spot possibilities for improvement or even innovation (Dunphy & Bryant, 1996; Molleman & Van der Zwaan, 1994; Wellins et al., 1991);
- The task variety provides greater job challenges and thus increases the quality of work and employee motivation and increases learning opportunities (Wellins et al., 1991);
- It is easier to achieve mutual adjustment and to learn from each other when employees are familiar with each other's tasks, than when a team consists of specialists, because communication and assistance are easier when people are somewhat familiar with each other's task domains (see also De Sitter, 1994; Nonaka & Takeuchi, 1995).

However, multiskilling also has potential disadvantages:

- Employees always use only part of their skills at any given time, which may have a demotivating effect; research has indicated that a situation in which employees do not use all of their capabilities affects motivation as negatively as a situation in which employees do not have the required capabilities to perform a task (Dunphy & Bryant, 1996; Molleman & Van der Zwaan, 1994);
- The perceived lower task identity which occurs since the employee is no longer linked to one specific task/function can be difficult for employees to handle. Their identity and status are often closely linked to their specialization. The same effect occurs in the area of task significance. Employees can feel less needed, since other colleagues can also perform their tasks ('someone else can also do this') (Molleman & Van der Zwaan, 1994);
- Training for multiskilling is very costly (Dunphy & Bryant, 1996; Wellins et al., 1991).

In sum, next to the benefits of multiskilling, there are also some drawbacks. Therefore it is necessary to achieve a balance between redundancy of functions and specialization. In general, organisations do not attempt to realise full multiskilling of all team members (Molleman & Van der Zwaan, 1994). In case study research, Dunphy & Bryant (1996) found that companies had the following reasons for limited multiskilling:

- It is not necessary to multiskill everybody in all tasks to maximise operational flexibility and, in fact, overskilling may lead to low skill utilization, frustration, and eventually, loss of competence in that skill.

- The competence levels required for some tasks may require specific and intense training over a long period of time: the investment in time and training to multiskill will therefore exceed the estimated value of the flexibility to be achieved;
- Individuals will tend to select a preferred set of tasks and skills and avoid others, as a result of varying aptitudes and motivation for different tasks.

Other options to increase opportunities for learning, besides multiskilling, that were found in the literature, include:

- Monitoring and safeguarding that important conditions for learning in the job are being met for each employee (Kraayvanger & van Onna, 1985):
  - a job which offers challenging and/or new situations / problems;
  - a certain amount of responsibility and freedom to fulfil tasks in the way that the employee thinks is most adequate (alternatives for action);
  - possibilities to engage in social relationships.
- Safeguarding *time* and *space* for reflection on daily work, for learning and for helping others to learn/teaching (Mehaut, 1994; De Jong, 1996);
- Preventing employees from meeting work situations which stifle their learning, such as situations (Kraayvanger & van Onna, 1985) with a high amount of regulation / rules / predictability, or situations which pose too much or too few challenges.

Literature suggests another way to foster informal learning, namely by deliberately creating opportunities for *'intentional learning'* by allowing team members to *actively participate in innovation and work redesign*, e.g. by implementing quality circles or process improvement teams (Onstenk, 1994; 1995; 1996). Interview participants also mentioned improvement teams, or (as a less far-reaching alternative) actively involving team members in analysing problems and creating a solution (meetings #2 and #3). According to them, this may have several positive effects on learning. First, team members who engage in such organised problem-solving activities learn much about the problem they investigate. Second, participating in this activity may promote a shift in their attitude to problems: respondents reported that engaging in improvement teams can help create a more active and solution-oriented attitude toward problems[ii].

Social work environment

As mentioned earlier, team members can fulfil a role in supporting each other in learning, by providing feedback or consulting each other. This supportive role of team members can be enhanced in a number of ways.

First, *team composition* deserves specific attention as a basic condition for learning from each other. The team members' competences have to be complementary to each other, in order for them to be able to learn from each other. With respect to the 'skill mix' in the team, participants from the group interviews (meetings #1 and

#2) suggest that it is important to enhance variety in general (in years of experience, in background, in problem solving style, etc.). It was also suggested that is worthwhile to assimilate 'specialist' competences within the team, for instance by adding maintenance mechanics from staff departments to the teams, and helping them to pass on their knowledge and skills to the team members. Such a balanced team composition is not only important from the viewpoint of 'learning', but also has also a work-related relevance. An adequate skill mix is necessary in order to be able to manage the work process autonomously, it is important that team members as a group represent a rich variety in knowledge and skills. Among other things this enables a team to solve problems from different angles (this enhances the quality of the solutions).

But merely ensuring variety of competences is available in the team does not ensure that people actively support each other in learning processes. In order to *stimulate such an active cooperation*, several alternatives were mentioned by the interview participants:

- The *team leader may encourage* team members to work together, consult each other or give each other instructions;
- *Improving communication skills* within the team - for example skills in giving and receiving feedback, active listening skills – can serve to make people more skilled at supporting each other;
- *Lowering the threshold for helping each other*. In order for team members to be able to learn from each other it is important that people are aware of the strengths and weaknesses of others, are willing to ask questions and learn from each other and can ask for input, as well as provide feedback to each other. Mutual respect and a willingness to learn are important basic values in order to create a safe environment for learning. Some interview participants reported that they explicitly create a 'code of conduct' in the team with regard to learning, team members agreed upon certain rules for helping each other, thus making it easier for team members to ask each other for advice.

Moreover, literature references were found suggesting *rewarding* employees who support learning processes of others (Onstenk, 1996) and/or making it more attractive for employees to share their knowledge (Mehaut, 1994).

Physical work environment

Finally, the physical work environment can be the focus of deliberate interventions, aimed to enhance learning opportunities. The work environment may be enriched by making available *material* support for learning in the workplace. For instance by building *feedback* on performance in the information system, as was suggested in the group interviews (all meetings), and also in the literature (Onstenk, 1994). Or support can be provided by making sure relevant *information sources*, in the form of documents, work descriptions, job aids, manuals, magazines, books, etc. are available to the employee (Onstenk, 1994; Warmerdam & van den Berg, 1992; Cheetham & Chivers, 2001).

Results are summarised in table 5.1.

Table 5.1 Support for informal learning in the workplace: overview

Type of support	*Sources*
Social support	
a. Team leader:	
• Supporting learning 'hands on' (coaching, mentoring)	• Group interviews • Literature: Onstenk & Voncken, 1996; Poell, 1998; Raper et al., 1997; Ratering & Hafkamp, 2000; Tjepkema & Wognum, 1995; Tjepkema et al, 2002
• Creating room and opportunities for learning by 'pedagogical interventions' in the work place: - Building a learning climate - Interventions aimed at conditions for learning, regarding employee competences, motivation, job characteristics, social work environment, physical workspace.	• Group interviews • Literature: Cheetham & Chivers, 2001; De Jong, 1996; Dunphy & Bryant, 1996; Kraayvanger & van Onna, 1985; Mehaut, 1994; Molleman & Van der Zwaan, 1994; Nordhaug, 1995; Onstenk, 1994, 1995, 1996; Onstenk & Voncken, 1996; Pearn et al, 1995; Poell, 1998; Raper et al, 1997; Ratering & Hafkamp, 2000; Smith, 1992; Tjepkema & Wognum, 1995; Tjepkema et al, 2002; Warmerdam & van den Berg, 1992; Wellins et al., 1991
b. Employees:	
• Supporting co-workers in learning (providing feedback, helping to solve problems…)	• Group interviews • Literature: Onstenk & Voncken, 1996; Poell, 1998; Raper et al., 1997; Tjepkema & Wognum, 1995; Tjepkema et al, 2002
c. HRD professionals:	
• Assisting the team leader in nurturing learning within the work place by influencing conditions for informal learning	• Literature: Onstenk & Voncken, 1996 Poell, 1998; Raper et al., 1997; Ratering & Hafkamp, 2000; Tjepkema & Wognum, 1995; Tjepkema et al, 2002
Material support	
• Documents, job aids, manuals, magazines, books, etc.	• Literature: Onstenk, 1994; Cheetham & Chivers, 2001; Warmerdam & van den Berg, 1992.
• Information system which provides employees / teams with adequate feedback	• Group interviews • Literature: Onstenk, 1994

5.2.2 Supporting formal learning

Next to creating a work environment that forms a rich 'landscape' of opportunities for (intentional) informal learning, learning within a self-managing work team can also be supported by creating formal learning situations on-the-job and off-the-job. In other words: by providing on-the-job and off-the-job training. Interview

participants in two meetings (meetings #1 and #2) stressed the importance of formal learning, and it also recurred in the literature review (Fousert, 1996; Orsburn & Moran, 2000). However, little *specific* guidelines were found on providing such training programmes to self-managing work teams. Therefore, the discussion below is very general.

Participants from the group interviews stress the importance and inherent value of providing formal training opportunities, and add the conditions that training activities are provided:

- On a 'just in time' basis (rather than 'just-in-case'), at moments that the team (members) needs them (e.g. working with brief and activity-oriented training modules, that team members can study whenever this particular topic is relevant). Some support for this observation could be found in the literature, where it is recommended that training for self-managing work teams should be organised in small units or 'modules' (4 hour or 8 hour packages, related to a specific topic), to be followed by the team members at a moment that it is both feasible and relevant to them (Fousert, 1996).
- In a way that matches the philosophy of self-management, and increases self-management skills of team members (e.g. self-directed learning modules, team learning activities, training that connects learning activities to actual work situations).

With regard to providing training opportunities, the following distribution of tasks seems appropriate, considering results of the group interviews and relevant literature (Onstenk & Voncken, 1996; Raper et al., 1997; Poell, 1998; Tjepkema & Wognum, 1995 and Tjepkema et al, 2002). The team leader / manager plays an important role in selecting training programmes, and can fulfil the role of trainer in more formal learning situations. Employees have an important responsibility with regard to seeking out appropriate training programmes, but can also fulfil the role of trainer to other employees in off-the-job courses or on-the-job instruction. HRD professionals can assist the team by developing or buying training programmes. In some cases, they may also serve as a trainer themselves.

Table 5.2, on the next page, provides an overview.

Table 5.2 Support for formal learning in the workplace: overview

Type of support	*Sources*
Social support	
a. The team leader: • Selecting training programmes • Training b. Team members: • Selecting training programmes • Training c. HRD professionals: • Developing or buying training programmes • Training	• Group interviews #1 and #2 • Literature: Fousert, 1996; Onstenk & Voncken, 1996; Raper et al., 1997; Poell, 1998; Tjepkema & Wognum, 1995 and Tjepkema et al, 2002.
Material support	
• On-the-job training programmes / materials • Off-the-job training modules	• Group interviews #1 and #2 • Literature review: Fousert, 1996; Orsburn & Moran, 2000

5.3 Supporting regulatory activities

The framework for the learning infrastructure also contains support for regulatory tasks with regard to learning: clarifying learning needs, assessment of learning outcomes and management of the learning process.

Supporting identification of learning needs

An adequate assessment of learning needs enables a conscious and deliberate use of learning opportunities, either in the work place or off-the-job. According to group interview participants, support in determining learning needs can be provided in a general sense: for instance by working on a general awareness of learning needs inherent to most problems and objectives, and by stimulating employee motivation for learning (all meetings). But support can also be more focused, by encouraging individuals to analyse specific situations for learning needs, and to support this analysis by targeted advice and appropriate tools (meetings #1 and #2).

In order to *stimulate awareness of team members concerning their learning needs*, participants from the first meeting considered it very important that the team leader engages in a comprehensive *'planning cycle*'. Learning and self-management go hand in hand if the team carries out the following cycle of activities (meeting #1):

- The first activity is raising *awareness of performance demands* placed by the team's environment, and specifically by the company strategy and the client's demands and expectations. One participant referred to this activity as 'allowing the wind of the market to blow in through the open windows'. Some examples of possible activities to increase team awareness of external demands include: providing an explanation of the how and why of the company vision, visiting clients or

interviewing a client panel. Creating awareness of external demands not only provides the team (members) with a venture point to determine learning needs, but at the same time creates motivation and energy for change and learning.

- Once they have an overview of the external demands, it is recommended that the team *reflects on the team's performance*: how well does the team meet these demands? Where lies room for improvement (and which improvements are necessary?). Whereas the first activity was oriented outwards, the second step is more internally oriented.

  Information on team performance plays a key role in a team's self-assessment, and in uncovering learning needs within the team. Participants from meeting # 3 particularly stressed this point. They asserted that information should be 'tailor made' and not too general in nature, in order to provide the team with concrete views of their learning needs. Sources of information can be external to the team, but team members themselves also carry much information on team performance. Engaging in *problem analysis* with the team can bring useful information to the surface, and at the same time enhance motivation from team members to create solutions for any problems they uncover. *Benchmark information* may also provide useful input for assessing team targets and learning needs. Teams may obtain new ideas for optimising their performance by studying other teams with a high performance level.

  Based on this self-reflection, the team and team leader can then set *targets for performance*, stating what the team wants to achieve, based on the (organisational, or even external) demands. Formulating team objectives provides an orientation necessary for learning, forms a background against which to clarify learning needs and thus serves to increase motivation for learning. Especially participants in meeting # 2 stressed the importance of establishing a *link* between team targets and personal objectives. If this link is not made, team targets will fail to have a motivating effect.
- As the first two phases in the planning cycle are important to create a background against which to interpret and/or establish learning needs, the third step involves formulating concrete learning objectives, as part of a team work plan. Based on the objectives set *for* the team (by higher level management), a *work plan* should be defined determining how team targets will be reached, and also specifying what resources and support are needed. Especially the participants from meeting #3 suggest to let the team make a *work plan and a learning plan simultaneously*. Assessment of available competences should be an integral part of this planning process, clarifying what necessary competences are already available in the team, and which ones should be developed (by adding people to the team, or by engaging in learning activities).

According to interview participants, actively involving teams in the entire planning cycle not only provides a good basis for self-management, but also for learning, as it will not only help the team members to obtain a clear picture of learning needs (evaluation as retroactive planning: Scheerens, in press), but at the same time serves to increase motivation for learning. However, it should be said that not all teams

work in this way. Even for many self-managing work teams, the broader context (external, organisational demands) is not clear to them, and targets are set *for* them, rather than *with* them. In the viewpoint of interview participants this makes self-management more difficult (a broad understanding of the work context provides a necessary basis for taking responsibility and realising self-management).

Participants from the group interviews warned that, even though learning needs will surface naturally as a self-evident step in the team's planning processes when the planning cycle is followed, *specific support with regard to identifying learning needs* is also needed. First, they pointed out that learning needs, formulated by the team, usually tend to focus on operational issues, directly related to performance targets. In order to realise such targets, specific competences are required. Respondents (especially in meeting #1) report that these 'natural' learning objectives tend to be mostly practical in nature, and rather short-term in their orientation. They find that *long term learning needs* do not surface automatically. It is therefore important to also specifically investigate long term learning issues, for instance by developing a more long-term vision on team development with the team. Long term issues might be related to team development, or to specific *individual development* issues. The latter deserve specific attention as well, according to interview participants (especially meetings #1 and #2). Next to making a team learning plan, making personal development plans (PDP's) is therefore also an important activity to support the identification of learning needs. Balancing the individual need for development and the organisational or team objectives is an important issue, in which not only the team leader plays an important role, but also the learner himself (Simons, 1999b).

With regard to *material support*, the literature review revealed another instrument, next to learning plans or PDP's (Boak, 1998), that is of specific use for determining learning needs within the context of a self-managing work team: the team cross-training matrix (or multi-skill matrix). This tool displays the level of proficiency of each team member regarding the different team tasks (e.g. Wellins et al., 1991; van Amelsvoort & Scholtes, 1994). Such an overview allows the team to analyse whether there are enough skills with regard to each task in the team, or whether it is necessary to develop more or different skills with more team members. It also clearly displays the basic skill portfolio of each employee. Those with very narrow skills can be encouraged to develop themselves more broadly. Several authors (Fousert, 1996; Wellins et al., 1991) suggest it is worthwhile to define a basic skill portfolio for team members, which all individuals within the team should possess. Using this common skill and knowledge base as a reference point, it is possible to align personal development needs and team needs.

Based on the literature on HRD roles and tasks (e.g. Onstenk & Voncken, 1996; Raper et al., 1997; Poell, 1998; Tjepkema & Wognum, 1995 and Tjepkema et al, 2002.) it seems logical that the HRD professional can provide assistance with regard to identification of learning needs, either by giving advice or by offering specific tools and techniques.

Table 5.3 provides a summary.

Table 5.3 Support for determining learning needs: overview

Type of support	*Sources*
Social support	
a. The team leader: • Creating general awareness on performance demands team, team plan and team learning needs (providing context) • Supporting team members in analysing specific individual (long term) learning needs • Linking team learning needs and learning needs of individual team members	• Group interviews
b. HRD professionals: • Providing advice and tools for identifying learning needs and making learning plans.	• Literature: Onstenk & Voncken, 1996; Raper et al., 1997; Poell, 1998; Simons, 1999; Tjepkema & Wognum, 1995 and Tjepkema et al, 2002.
Material support	
• Team learning plans (as element of team work plan)	• Group interviews
• Individual learning plans, or personal development plans	• Group interviews # 1 and # 2 • Literature: Boak, 1998
• Team cross-training matrix (or multi-skill matrix	• Literature: Fousert, 1996; Van Amelsvoort & Scholtes, 1994; Wellins et al., 1991
• Basic skill portfolio for team members	• Literature: Fousert, 1996; Wellins et al., 1991

Supporting assessment of learning outcomes

With regard to the second category of regulatory activities, assessment of learning outcomes, fewer specific ideas and experiences were mentioned in the group interviews. Providing *feedback* and stimulating *reflection* were both mentioned before as activities of the team leader that are important in determining learning needs and supporting learning. Of course, they are also helpful for assessing what was learned. This may take place either in team sessions or in individual meetings (PDP meetings, yearly performance reviews).

But apart from these activities, only two concrete pointers were given with regard to assessing learning outcomes. First, the importance of *assessing and rewarding competences that are not acquired through formal schooling*, but rather through years of (work) experience and informal learning, was mentioned (meeting #1). In order to stress the importance of informal learning, to engage people actively in this type of learning processes and to encourage team members to help co-workers in informal learning, it is essential to also acknowledge and reward the outcomes of such learning. Measuring and acknowledging informally acquired competences is not yet

a widespread activity, but a growing number of companies engages in experiments in this area.

Second, participants stressed the importance of acknowledging and respecting each team's (and each individual team member's) own *'natural' pace of development* (meeting #1). It was discouraged to measure growth according to certain standard models of (team) development. Rather, participants preferred to work with more specific, tailor made models for assessing the level of development.

This issue was not elaborately discussed during the group interviews, and it was hard to find specific literature on the topic. Given the results in other areas, and the general literature on HRD roles (Onstenk & Voncken, 1996; Raper et al., 1997; Poell, 1998; Tjepkema & Wognum, 1995 and Tjepkema et al, 2002), perhaps the team leader is the most obvious person to set learning objectives and especially performance criteria, involving the team members, and engage in evaluation activities (e.g. PDP meetings, yearly performance reviews). Team members may also fulfil a role in assessing results of their own learning activities, perhaps both in a formal and an informal way. HRD professionals can help the team by providing instruments for evaluation and perhaps by carrying out evaluation activities.

With regard to *material* support for assessment of learning outcomes, the literature review provided some examples. Though many questions with regard to measuring training effectiveness still remain, there are several methods for evaluating learning outcomes, especially for formal learning activities, such as interviews and questionnaires (e.g. Nieveen & van den Berg, 2001; Witziers, 2001). Moreover, the number of tools for assessing competences that were acquired as a result of informal learning, appear to be increasing. Over the last few years, the interest in assessing informally acquired competences has grown considerably. Recently, an expertise centre for assessing informally acquired competence (EVC) was established in the Netherlands. Its aim is to gather best practices and to develop tools to help organisations in the assessment and reward of informal learning. Some of the most promising techniques include portfolios (Tillema, 2001a), practical work sample tests ('proeven van bekwaamheid' in Dutch) (Tillema, 2001b), 360 degree feedback (Kuijpers & Jellema, 2001) and development centers (Tillema, 1996). (Such instruments can also be used for assessment purposes in more formal learning programmes).

An overview is provided in table 5.4, on the next page.

Table 5.4 Support for assessing learning outcomes: overview

Type of support	*Sources*
Social support	
a. Team leader: • Providing feedback on performance, stimulating reflection (e.g. PDP meetings)	• Group interview #1 • Literature: Onstenk & Voncken, 1996; Raper et al., 1997; Poell, 1998; Tjepkema & Wognum, 1995 and Tjepkema et al, 2002
b. HRD professionals: • Providing instruments for assessment and/or evaluation • Carrying out assessments/ evaluations	• Literature: Onstenk & Voncken, 1996; Raper et al., 1997; Poell, 1998; Tjepkema & Wognum, 1995 and Tjepkema et al, 2002
Material support	
• Evaluation instruments for formal learning programmes, e.g. interviews, practical work sample tests and questionnaires	• Literature: Nieveen & van den Berg, 2001; Tillema, 1996, 2001; Witziers, 2001
• Evaluation instruments for *informally acquired competences*: e.g. portfolios, practical work sample tests, development centres	• Group interview #1 • Literature: Kuijpers & Jellema, 2001; Tillema, 1996, 2001

Supporting management of the learning process

The final type of regulatory activity to be considered is 'management of the learning process'. Especially in the case of informal learning, the learner fulfils an active role in this respect. How can team members be supported in actively monitoring and managing their own learning? This was considered not only in a specific sense (meaning: how do people manage a specific learning activity), but also in a more general sense: how do they monitor their personal development, as 'lifelong learners'?

According to interview participants, *encouraging team members to take on responsibility* for their own learning is a first step (all meetings). Respondents stressed the essential role of the team leader and higher-level management in this respect. Ideally, the team should be managed and supported in such a way that learning is facilitated and challenged, *and* that team members are encouraged to take on responsibility for their own learning. Earlier, some suggestions were made as to how team leaders can enhance motivation for learning. Respondents stress that management's behaviour is extremely important in this respect: if they claim to value learning and to expect an active role of team members in this respect, it is imperative they 'walk their talk' (meetings #1 and #2). This also came up in the literature review (e.g. Ratering & Hafkamp, 2000).

The *reward system* may also influence the degree to which team members take on an active role with regard to learning and development (meeting #1). If team members are rewarded for learning, they will be more inclined to actively engage in learning

activities. (The reverse is also true: if team members are not rewarded for learning related tasks, motivation to perform these tasks will be lower. Not only because of the money that is attached, but also because of the implied message that learning is not an essential task.) There is no clear-cut answer on how to realise reward systems that also acknowledge learning related activities. Most reward systems are primarily based on work performance in a more strict sense, and learning is still secondary to work performance. However, some examples of teams were mentioned, where supporting others in learning is an integral aspect of the task and competence portfolio of the more experienced team members in more comprehensive (more senior or higher) job roles or function levels, for example 'all round' operators.

Awareness and knowledge on the nature of learning processes, and of conditions that are important for learning, can stimulate team members to take on an active role in managing learning processes, and help build a learning environment (meetings #1 and #2). Participants stressed that many people implicitly hold rather limited views on learning (equating it to classroom training), and are in general sometimes quite unaware of the amount of informal learning in everyday working life. A notion that also recurs in the literature (e.g. Ratering & Hafkamp, 2000; Simons, 1999a). Increasing awareness of different types of learning processes and conditions that are important for learning, leverages team member's possibilities for recognising and managing learning processes.

Next to creating a sense of responsibility for, and awareness of learning within the team, it is considered important to explicitly *organise support for learning* in a transparent way (all meetings). Just as a team has, for instance, a leadership function, a financial and a logistic function, it is also possible to distinguish a 'learning function'. This was elaborately discussed at several points in the interviews, and is explored more thoroughly in section 5.5.

Considering *material support* for managing learning, no specific suggestions were made in the group interviews. It appears that the use of a *PDP* (mentioned earlier) can also help to manage learning. In the literature, references were found to the importance of material support, in the form of *methods* for self-directed learning (Ratering & Hafkamp, 2000).

Table 5.5, on the next page, provides an overview.

Table 5.5 Support for managing the learning process: overview

Type of support	*Sources*
Social support	•
a. Team leader (& higher level management): • Stimulating awareness of importance of learning, and sense of personal responsibility for learning (e.g. by model behaviour, articulating a vision on learning, rewarding learning, creating awareness on the nature of learning).	• Group interviews #1 and #2 • Literature: Onstenk & Voncken, 1996; Raper et al., 1997; Poell, 1998; Ratering & Hafkamp, 2000; Simons, 1999; Tjepkema & Wognum, 1995 and Tjepkema et al, 2002
• Organising leadership / support for learning in a transparent way: e.g. appointing learning coordinator, clarifying role of team leader	• Group interviews
b. HRD professionals: • Organising support for learning in a transparent way: e.g. appointing learning coordinator, clarifying role of team leader	• Group interviews
Material support	
• PDP's	• Literature: Boak, 1998
• Self-directed learning methods (incl. tools)	• Literature: Ratering & Hafkamp, 2000

5.4 Conditions for learning

A very important finding from each of the group interviews was that the original framework for the learning infrastructure was too narrow in its focus. It basically formed a way to organise only fairly deliberate learning interventions, targeted at specific learning and regulatory activities (identifying learning objectives, managing learning, evaluating learning results). As such, it – unintendedly - focused too strongly on more or less *deliberate support for* learning.

As became clear from the description in sections 5.2 and 5.3, some of this support is targeted towards influencing conditions for learning, such as employee motivation, or time for learning. Interview participants (all meetings) contended that such *general conditions* for learning should also be regarded as an integral element of the learning infrastructure in their own right, because they are of great influence to learning within teams.

The importance of *team leadership* was mainly stressed during the first and second meeting, participants from the third meeting particularly underlined the importance of *team characteristics*. Additional literature review revealed also conditions at the *organisational level*, the *workplace level* and the *employee level*. This section provides an overview of conditions mentioned during the group interviews, and found in the literature review. Conditions for learning were defined as: *characteristics of the team, the organisation or the individual, that enable or hinder learning from team members.* Unlike

support for learning, conditions for learning could not be related to specific learning activities, rather *they influence learning in general*. As part of the support (especially support for informal learning) consists of fostering positive conditions for learning, there is some overlap between the text below and sections 5.2 and 5.3.

Conditions at the organisational level

First, participants indicated that – ideally - a team should be embedded in *an organisational environment that is based on self-management* (especially meeting #3). If the entire organisation is built on the principles of self-management, this makes it easier to implement self-management on a team level, and – subsequently – the opportunities for learning that are associated with self-management are increased. If, on the other hand, the team is an isolated self-managed unit within a company that is on the whole more bureaucratic in nature (as is for instance the case in 'pilot'- or experimental teams), this makes it more difficult to realise self-management on the team level (see also: chapter 1 and Orsburn & Moran, 2000; Pasmore, 1988; Ray & Bronstein, 1995; Wellins et al., 1991; Sips & Keunen, 1996). Thus, an organisational context that supports self-management and learning is an important condition for a conducive learning environment on the team level. For example, it is considered important that both formal and informal reward mechanisms in the organisation support the team leader in displaying exemplary behaviour with regard to learning (e.g. if a team leader admits to learning needs: does this result a loss of face, or does it improve his image?). This will encourage and help the team leader in creating a positive learning climate within the team.

A specific element in the organisation context that was mentioned explicitly as influencing the learning climate, is *top management's role* (meeting # 1). Interview participants stressed the importance of top level managers creating *and* communicating a clear vision on learning and self-management. If they clarify how they view learning and self-management, and why they consider both important for the organisation, this influences motivation for learning at the team level, and provides direction. Interview participants warn that, in communicating the vision, top management's behaviour is at least as important (or perhaps even more so) as their words (again: they have to 'walk their talk', and set an example by their own behaviour) (see also Ratering & Hafkamp, 2000).

Conditions at the team level

Team leadership

In building a learning environment, the team leader is a very important factor. As was discussed in section 5.2, the team leader influences learning *in a direct sense*: by providing resources and safeguarding conditions for informal learning and by providing 'hands-on' support for learning (coaching, assessing learning needs, etc.). But interview participants contend that, next to this type of focused and deliberate

attention for learning, the way in which he generally fulfils his managerial role also influences learning opportunities within the team to a great degree. Two aspects are especially relevant.

First, according to interview participants (all meetings), the *way* in which the team leader manages to set out a clear direction for the team, influences learning. The importance *of setting clear objectives for - or rather: with - the team* was stressed. Such objectives provide the team, and its members, not only with a direction for learning, but also increase motivation for learning and help to clarify learning needs. To achieve this, respondents stressed that it is essential that team members can relate to organisational, or team objectives. This cannot be realised in a one-shot intervention, but requires an ongoing process of communication and negotiation on objectives (interview participants used the term 'parallellisation of targets'). The team leader should therefore clearly communicate corporate goals, and help the team to translate them to the team level, and link these goals to their personal objectives. Given the nature of the process, team members refer to setting team targets not only as a *prerequisite* for learning within the team, but *as a learning process* in its own right. In order to enable team members to understand the background of organisational objectives, and to participate in the discussion of team targets, it is helpful if team leaders first increase team member's *awareness of business strategy, the organisational context in general and client needs*. This provides a necessary background for participating in the goal-setting process and for interpreting objectives. This aspect was already discussed as the first phase in the 'planning cycle' (see section 5.2.1).

Secondly, interview participants stressed that it is important that team leaders make *agreements with the team on how to reach these targets*, in a general sense. In this sense, they set borders for self-management, by making a work plan, but also being clear on (the amount of) room, procedures and processes for self-management. All of this presupposes a clear vision on self-management on the part of the team leader.

In addition to providing borders by setting a clear direction and making agreements on the degree of self-management, participants stressed that it is essential that the team leader provides *room* for self-management within these borders in the day-to-day operations (all meetings). In other words: that he adopts a 'hands-off', rather than a 'hands-on' management style, and *manages by results*, rather than by process. This creates room for learning and improvement within the team. Respondents indicated that this is not always easy for team leaders; it requires much of their patience and trust.

Team characteristics

Next to the team leader, team characteristics can also harbour some important conditions for learning according to interview participants (particularly stressed in group meeting #3). First, as stated before, interview participants consider it important that the team characteristics are in line with the principles of self-

management. Participants indicated that this is even important on the level of the *physical work surroundings*; team housing for instance: is it adequate to support team work?

Another issue of importance is the *reward system* within the team. Participants agree that the reward system should stimulate learning, but they also agree that there is no easy recipe for realising this. They underline that, at the very least, it is important that learning is not stifled by reward systems (e.g. because people are more rewarded by hierarchy or years of experience, rather than actual competence and performance). Literature references support the relevance of reward systems (Onstenk, 1996; Mehaut, 1994).

Another team related condition for learning is *team size*. According to interview participants, the team should be small enough to 'feel' like a group, and for people to learn from each other, but large enough to do all the work. There is no general rule for the ideal team size, though the number of 8-12 that is often mentioned in the literature seems quite accurate (e.g. Kuipers & Van Amelsvoort, 1990).

Composition of the team is another key factor. Participants pointed out that incorporating certain specialised tasks, such as quality control, in the team, makes the team a more 'rich' learning environment. However, when knowledge for executing those tasks remains on the staff level, all questions will still be directed to that staff department, and little will be learned on the shop floor level. Therefore, respondents made a plea to include the *specialists* that used to fulfil those tasks in the team. In that way they can transfer their specialised knowledge to the team members. Also in other respects, the group of team members should display *variation*, in order for the team to form a rich learning environment. A team with a high degree of variation stimulates learning, according to participants. Team members learn from each other, either because others have special competences, or because others challenge them to see things in a new light (other perspectives). Influencing team composition was mentioned earlier as one of the ways in which the team leader can improve conditions for learning. However, not all elements are under control of the team leader. Therefore, team composition is also included here as a general condition for learning. Literature sources also suggest the importance of variety in people if learning is to be stimulated (e.g. Nonaka & Takeuchi, 1995).

Conditions at the workplace and individual level

Next to these conditions at the organisation and team level, that were brought forward during the group interviews, some conditions at the workplace level can be found in the literature on the Baitsch & Frei framework for learning in the workplace: job latitude and task variety (e.g. Baitsch & Frei, 1981; Onstenk, 1995; Van Onna, 1985b; Christis, 1993; Nonaka, 1995; Van der Krogt, 1995; De Jong, 1991; Van der Klink, 1999). Likewise, the Baitsch & Frei framework mentions conditions at the individual level: motivation for learning and competences (such as

learning skills) (e.g. Baitsch & Frei, 1981; Onstenk, 1994; Senge, 1990; Argyris, 1990; Torracco, 1999). These were all discussed in chapter 4.

In order to complete the model, these conditions are included. They were not explicitly mentioned as conditions by the interview participants, but the fact that they came up at different moments in the interviews when discussing support for learning (see before), is an extra indication of their importance. Influencing job characteristics and employee motivation were mentioned earlier as ways in which the team leader can improve conditions for learning (see 5.2.1). However, not all elements in this respect are under control of the team leader. Therefore, they are also included here as general conditions for learning.

Table 5.6 provides an overview of the most important conditions.

Table 5.6 Conditions for learning within self-managing work teams: overview

Conditions	*Sources*
Conditions at the organisation level	
• Extent to which the organisational context *as a whole* supports self-management and learning	• Group interview #3 • Literature: Orsburn & Moran, 2000; Pasmore, 1988; Ray & Bronstein, 1995; Wellins et al., 1991; Sips & Keunen, 1996
• *Top management's vision and behaviour* supporting self-management and learning	• Group interview #1 • Literature: Ratering & Hafkamp, 2000
Conditions at the team level	
• Team leadership: - degree to which leader provides direction for the team, and sets clear borders for self-management; - degree to which leadership provides room for self-management	• Group interviews
• Degree to which *physical* work environment supports self-management	• Group interview #3
• Team size	• Group interview #3 • Kuipers & Van Amelsvoort, 1990
• Team composition	• Group interviews #2 and #3 • Nonaka & Takeuchi, 1995
• Reward system	• Group interview #3 • Literature: Onstenk, 1996; Mehaut, 1994

(table continues on next page)

Table 5.6 – continued -

Conditions	*Sources*
Conditions at the job/workplace level	
• Latitude • Diversity	• Literature: Baitsch & Frei, 1981; Onstenk, 1995; Van Onna, 1985b; Christis, 1993; Nonaka, 1995; Van der Krogt, 1995; De Jong, 1991; Van der Klink, 1999
Conditions at the individual level	
• Motivation for learning • Competences (such as learning skills)	• Literature: Baitsch & Frei, 1981; Onstenk, 1994; Senge, 1990; Argyris, 1990; Torracco, 1999.

Naturally, the four levels of factors, that are presented separately in the table, influence each other reciprocally; they form an intricate web of conditions.

Most of these conditions probably not only influence learning directly, but also (or) in an indirect way, by affecting the support for learning within the team. For instance, if a team is very small (team size is one of the conditions) this might influence *learning* of team members, for example because a small team leads to little specialization: people take on broad tasks and this fosters learning. But it could also influence *support* for learning: as the variety in team members is smaller (because of the smaller team size), opportunities for learning from others are probably less than in a larger team.

5.5 Organisational aspects of the learning infrastructure

Next to the 'content' and the organisation of the learning infrastructure, other issues that were addressed in the group meetings were the *organisation* or formalisation and the *quality* of the learning infrastructure. Results with regard to both aspects are discussed in this section.

5.5.1 Organisation of support for learning

Activities with regard to supporting learning, as discussed in sections 5.2 and 5.3, need to be organised to some extent. The organisation of support for learning within self-managing work teams was discussed at several moments in the group interviews. First, a brief overview is provided of the most important tasks with regard to providing support, and the people involved in providing support. Second, the issue of how these tasks may - or should - be organised, is discussed.

Support tasks and people involved in providing support
Participants from meeting #2 specified the following as being the most important tasks regarding support for learning:

- Safeguarding conditions for informal learning by analysing the team as a learning environment: what factors enhance learning, what inhibits learning?
- Monitoring the quality of learning processes
- Providing support throughout the different steps in a learning process and helping to reflect on learning process (how does a learning process take place?) (coaching self-directed learning)
- Answering specific learning questions (e.g. experts)
- Providing support in clarifying learning needs
- Providing support in clarifying learning results

All of these activities were mentioned in sections 5.2 and 5.3 as ways in which support for learning and regulatory activities can be provided. This list can be seen as a summary, listing the most basic activities.

The first four activities - analysing the team as a learning environment, monitoring the quality of learning processes, providing support during the learning process and answering specific questions - all fall within the category of 'support for learning activities'. The latter two relate to regulatory activities. In itself, the overview supports the decision to include such regulatory activities in the framework of the learning infrastructure, and to include support for informal learning.

Interview participants considered that different people should fulfil an active role in a team's learning function. Next to the team leader, other team members (e.g. experienced workers, specialists in some area, former quality staff, ..) can also fulfil an active role in the learning function. And HRD staff may also be involved. This issue came up in all interviews, but was also most thoroughly in meeting #1.

A general proposition from interview participants is that support for learning is strongly intertwined with the daily work and the work environment. In this respect, the *team leader* is considered an important actor within the learning function. His main task is considered to be to safeguard and develop a sound learning climate, and (or even by) managing and supporting the team in such a way that both room and support for learning is provided. For instance by:

- Setting clear performance targets (even challenging the team, or individual team members)
- Removing obstacles to learning, and creating favourable conditions for learning
- Giving recognition to learning results, stimulating learning initiatives, paying attention to learning within the team.

In other words, the team leader has a responsibility in managing the workplace as a 'learning place' (by creating opportunities for informal learning). Moreover, respondents also propose that the team leader fulfils tasks with regard to organising more formal learning processes. Especially in formulating learning needs, and learning plans, they consider the team leader to be an important actor.

Next to the team leader, *higher management* levels also have responsibilities with regard to creating a favourable learning climate. Interview participants stressed the

importance of top management creating and communicating a vision on learning (and working), and creating room for learning.

In general, from *team members*, a pro-active attitude with regard to learning is expected by interview participants. They have to seek out opportunities for learning, for instance by actively looking for possibilities for improvement of the work process, or team performance (and reaching team performance targets). Team members are also expected to carry a large responsibility in reflecting on their own learning needs, and formulating their own learning plans, or personal development plans (supported by the team leader).

What role do *HR(D) professionals* fulfil with regard to learning within the team? According to interview participants, their role is mainly one of providing support and facilitating learning processes. HRD staff may give advice and support team leaders and team members in learning related issues, but the initiative remains on the team level. One of the ways in which HR(D) staff can provide support is through offering training programmes (through buying or developing training in house). Some of the training can be offered pro-actively (making a standard list of training, that team members can choose from), but it is also considered important that HR(D) professionals respond flexibly to ad hoc learning questions from the team.

This overview is a summary of the picture sketched in sections 5.2 and 5.3 regarding social support for learning. Some of the interview participants contend that, next to the manager, team members and HRD professionals, *staff members* are also relevant actors in the learning function. They can offer support in learning within the team and transfer their own experience. Especially with regard to those tasks that the team takes over from staff departments (e.g. quality control).

The division of tasks with regard to supporting learning as proposed by the interview participants is very much in line with literature and research in this area. Research also revealed some barriers for the proposed task division. The most important ones are (e.g. Onstenk & Voncken, 1996; Raper et al., 1997; Poell, 1998; Tjepkema & Wognum, 1995; Horwitz, 1999; Tjepkema et al, 2002):

- *Managers lacking time and/or motivation to fulfil new tasks*
  Managers often experience a heavy workload already, and are not eager to take on new tasks with regard to learning and training, such as conducting needs assessments or coaching team members. In many organisations a task division has grown in which the HRD professional has taken over many of the HRD tasks, managers are usually not eager to 'take back' these tasks. A related dilemma may be that managers are often not judged by, or rewarded for these tasks (either informally or formally). Operational issues, such as reaching production targets, are much more important in this respect.

- *Uneasiness with more informal ways of learning*
  Both managers and employees have their own ideas and associations with 'good learning'. There is a tendency to overly focus on formal learning instead of informal learning, partly because the idea of formal learning is easier to grasp and manipulate (Kraayvanger, 1995). Tjepkema & Wognum (1995) found that managers and employees often value formal off-the-job training, even if this is not the most suitable method of learning. For example, in their research they found one case in which the HRD department had developed an on-the-job learning programme, which was transformed by the job instructor into a formal, off-the-job program, because he felt more at ease and had the idea that 'more was being learned that way'. In another case study organisation, HRD professionals themselves experienced the uneasiness of letting go some of the structure in a learning process, since this feels like letting go some of the control over what is being learned. Onstenk & Voncken (1996) report similar findings. They found that both workers and production management are familiar with certain courses (which are sometimes followed for years by different 'generations' of employees) and therefore grow 'attached' to them. They also conclude: 'Frequently, management lack the imagination for the integration of learning and working. The background to this is, among other things the fact that a break is being made with existing practices and "received wisdoms".' Finally, Raper et al (1997) also conclude that unfamiliarity with the new role and insecurity on what is expected of them, may also lead to resistance to a system of work-based learning, both on the part of managers and employees. Simons provide an overview of general assumptions with regard to learning, also confirming these misunderstandings of what learning is.
- *Practical obstacles*
  Lack of time for training and learning is considered a major obstacle. Off-the-job training programs have the advantage that employees are not disturbed by current problems and can devote all of their energy on learning during the training. But it is sometimes difficult for employees to attend the programme. Learning processes on the job are often disrupted, for instance because of sudden, urgent production problems. And more informal learning opportunities, arising from job rotation or mutual support of colleagues can be jeopardised by work pressure or a shortage of personnel.

Such barriers suggests that realising a learning function in which the team leaders and team members fulfil an active role, and where opportunities for informal learning are being recognized, nurtured and used, requires specific attention. For instance, it may be helpful to prepare and train team leaders for their roles of coach and manager of the learning environment within the team, and it may be useful to include training and mentoring responsibilities in job descriptions of both supervisors and employees (Onstenk, 1995; Tjepkema & Wognum, 1995). In order to support people in devoting time to learning-related tasks, some degree of formalisation of such tasks can be helpful (for example to make these tasks visible, and to allocate responsibilities).

Formalisation of support for learning

Interview participants (all meetings) clearly underlined that they consider support for learning to be an integrated element of the entire organisation. In meeting #2 this was discussed most thoroughly. Participants in this interview clearly stated that they considered the learning function not to be a readily identifiable organisational entity, such as a department ('heavy', expensive, inflexible, highly visible), but rather a diffuse and amorphous integral element of the team (flexible, largely invisible, one or two contact persons, inexpensive). Different learning-related tasks can be performed by different people; who then together form the 'physical manifestation' of the 'learning function'. Most people who can considered to be part of the learning function - in the sense that they carry out activities to support learning processes - fulfil these learning related tasks as an integral part of their work. If a firm has HRD staff, they are the only actual 'learning specialists' within the learning function.

None withstanding the high level of integration of the learning function within the team context, it was considered important by interview participants to achieve some level of organisation of the learning function, in order to increase transparency. This is considered necessary to facilitate self-management with regard to learning, for instance (see above). Formalisation or organisation of the learning function entails identifying learning tasks, associating these tasks to certain people, and – preferably - creating a budget (time and money).

According to participants from meeting #2 the organisation of the learning function in a team should meet the following requirements:

- Transparency (team members know who to turn to in case they need support for learning, they also know what to expect from whom);
- Resources (sufficient means for learning should be available, in terms of time and money);
- Speed (team members should receive help fast, they don't have to wait long for an answer to their questions);
- Low costs for maintaining the learning function;
- Monitoring of learning processes (the learning function is not only focused on supporting learning in a narrow sense, follow up and evaluation are integral aspect of the learning function).

These criteria are relatively general in nature, and as such they are relevant for all corporate functions. The learning function is no exception to the rule, in this respect.

Participants from meeting #3 proposed to organise the learning function predominantly by organising the 'leadership of learning'. The best person to be the leader with regard to learning is not always the team leader, nor the oldest or most experienced team member. Enthusiasm, and a close affinity with learning and personal development are perhaps more apt criteria for a 'leader in learning'. Nor does it have to be one person, leadership for learning can also be shared.

5.5.2 Quality of the learning infrastructure

Another issue with regard to the organisation of the learning infrastructure is how to determine whether or not it is adequate. The *quality* of the learning infrastructure was specifically discussed in the group interviews. Participants from meeting #2 were interviewed on effectiveness criteria for the learning infrastructure (what demands should be placed on the organisation of the learning infrastructure?), while participants from meeting # 3 more closely considered the issue of how to determine whether a team's learning infrastructure is functioning adequately.

Performance criteria for the learning infrastructure

With regard to the effectiveness of the learning infrastructure, interview participants (meeting #2) mentioned the following criteria:

- Learning is supported in such a way that self-management (also with regard to learning) is stimulated and supported. At any rate, support for learning should not lead to a situation in which the team (or team members) become more dependent or self-management is impaired.
- Competence development of individual team members and the team as a whole is visible.
- Learning initiatives are linked to what is needed for increased performance, there is a link with the organisational objectives (learning is a means to an end, not an objective in itself).
- The team increases its understanding of the relation between learning and performance, teams and team members understand that not all performance problems indicate a learning need (they recognise when performance problems do indicate a learning need, and when they don't). As a result, the team becomes more competent at using learning interventions at the right time, for the right issues.
- The learning capacity within the organisation is increased. Possible indicators are that team members learn from each other and increasingly know where to find relevant knowledge within the company.

In other words: participants stress that the learning infrastructure should not only result in learning processes on the individual and even the team level, but also support self-management and serve to increase the capacity of team members to manage their own learning and development. This reveals a certain perspective on the way in which support should be provided. These criteria presuppose a way of support in which the capacity for self-management, also with regard to learning, is increased.

Indicators for effectiveness of the learning infrastructure

In the third meeting, participants were asked for indicators that can be used to determine whether the existing learning infrastructure is adequate, or whether extra support is required. Every team has a 'naturally developed' learning infrastructure

('ecology perspective', see chapter 4), and with regard to those issues where it does not meet with demands for support, it is worthwhile to seek for ways to optimise the existing infrastructure (this was stressed by participants from interview # 2). For judging the quality of a learning infrastructure, participants from meeting #3 proposed to consider both:

- Competence (and attitude) related indicators: are team members displaying learning related competences and attitudes such as asking for help and feedback, helping each other, stimulating each other in learning, etcetera;
- Outcome indicators, for example: is a team being successful in taking on new tasks? Or: is a team learning from mistakes? In such instances it is clear that something was learned (without it being clear how this learning process unfolded exactly).

Both competence- and outcome indicators are relevant to include in the evaluation of the learning infrastructure, according to respondents. As most valuable indicators they propose to look at:

- Initiatives that a team, or a team member take to solve problems or realise improvements;
- The degree to which a team or a team member actively invites feedback.

In those situations where team members can be seen to actively try to realise improvements, and reveal a learning attitude and learning skills by asking for feedback, it is very likely that the team has little difficulties in learning. In other words: the existing learning infrastructure is sufficient. Even if it is less developed and less elaborate than the learning infrastructure in another team that may have more difficulty in learning…. In other words: the participants take a rather pragmatic stance regarding the matter of effectiveness: the quality of the learning infrastructure is not to be measured by itself, but always in relation to the learning need of the team. Irrespective of the *amount* of learning that is taking place, if the team is able to learn what is needed, in order to fulfil team tasks, it can be concluded that the learning infrastructure functions to a satisfactory level.

5.6 Conclusions

This section lists the most important conclusions with regard to the learning infrastructure of self-managing work teams in section 5.6.1, and looks forward to the next phase in the study in section 5.6.2.

5.6.1 The learning infrastructure

As explained in section 5.1, the group interviews (and the literature review) served two purposes: validating the tentative framework, and collecting data on support for learning within teams for 'filling' the framework. Outcomes in both areas are discussed below.

Expansion of the framework

During the group interviews, it soon became clear that the original model was too narrow in focus. It basically formed a tool to organise only fairly deliberate learning interventions, targeted at specific learning activities or regulatory activities (identifying learning needs, managing learning, evaluating learning results). As such, it focused only on more or less *intentional support for* learning, and needed to be broadened to include general *conditions* that (more or less inadvertently) influence learning within self-managing work teams in general, for example, the leadership style or team characteristics. Such general conditions were reported to be of great influence to learning within teams, though it was not possible to place them into one of the categories of the original tentative model. Therefore, the original framework was revised to include room for more general conditions. Table 5.7 presents the revised framework.

Table 5.7 Activities of learners and the learning infrastructure: revised framework

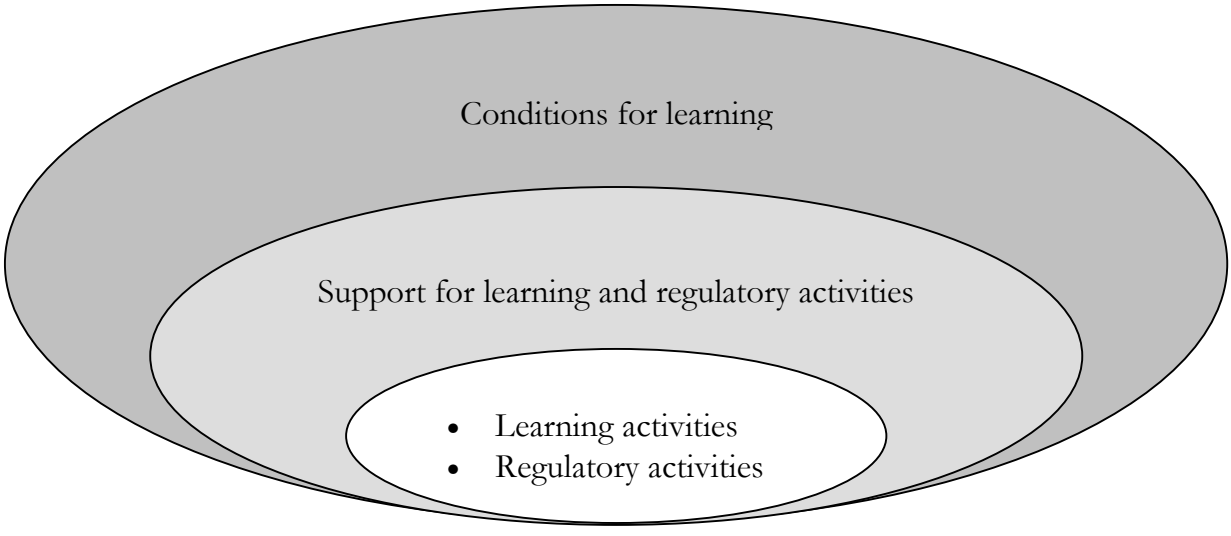
Activities of learners		*Learning infrastructure*	
		Support	*Conditions*
Learning activities	• Informal learning in the workplace: unintentional & intentional	• Social support	Conditions for learning on the: • organisational level • team level • workplace level • individual level
		• Material support	
	• Formal learning: on-the-job & off-the-job	• Social support	
		• Material support	
Regulatory activities	• Identifying learning needs	• Social support	
		• Material support	
	• Assessing learning outcomes	• Social support	
		• Material support	
	• Managing learning process	• Social support	
		• Material support	

The revised version of the framework now consists of two elements (see chapter 4 for the initial tentative model):

- Support for learning: measures, instruments, activities supporting team members in learning activities, in a more or less deliberate way.
- Conditions for learning: other aspects of the team and its environment that influence learning, either positively or negatively.

The relation between the different aspects of the framework is depicted graphically in figure 5.8 on the next page. The activities of learners are placed in the centre. A distinction is made between learning activities and regulatory activities. Learners seek out and receive concrete support for fulfilling these activities. Material support (e.g. a manual) is distinguished from social support (e.g. feedback from team members) for learning. Support forms the first 'layer' of the learning infrastructure. In a more general sense, both *learning and regulatory activities*, and the amount and type of *support* for learning are also influenced by *conditions* (at the organisation, team, workplace and the individual level). These form an integral part of the learning infrastructure, and are depicted here as the second 'layer'.

Figure 5.8 Relationship between the elements in the framework



The revised framework provides a way to conceptually organize all of the interventions and conditions that, deliberately or accidentally, influence learning within self-managing work teams. The incorporation of general conditions in the model serves to underline the specific nature of the learning infrastructure as a natural and integral part of the organisational context. This feature of the learning infrastructure was particularly stressed by interview participants.

The learning infrastructure

Support for learning activities and regulatory activities

With regard to *supporting learning activities*, interview participants mainly mentioned interventions and tools related to supporting *informal* learning processes. Literature on learning within self-managing work teams also emphasised informal learning. Regarding social support for informal learning, the team leader plays an important role in fostering positive learning conditions in the workplace. Moreover, the team leader, as well as the team members, may provide 'hands on' support in learning, for instance by coaching people or by providing feedback. HRD staff appears to have mainly a role in supporting team leaders. Material support for informal learning may

include information sources that can be used for learning in the workplace (manuals, job instruction sheets, ..).
Providing *formal* learning opportunities also plays a role, but is considered less important. In the case of social support for formal learning, little specific guidelines were found. The team leader can provide support in choosing training activities, team members are expected to play an active role themselves in this regard. HRD professionals may provide support in choosing courses and by delivering and designing learning materials and courses. Material support in the form of on-the-job training materials, off-the-job training modules appears relatively important in this category.

Regulatory activities can also be supported in several ways:

- With regard to encouraging and supporting *determining learning needs*, the team leader plays an important role in creating awareness on learning needs in general, in helping team members express learning needs, and in linking them to team objectives. Support of the team leader in this respect can be either in the form of a specific, targeted activity (e.g. PDP meeting) or be integrated in the day-to-day management of the team (in the way the team leader sets targets with the team, for instance). Specific tools can be used in this area, some of which are specific for self-managing work teams (such as team skill matrices), others that are more general (for example PDP's).
- In the area of *assessment of learning outcomes*, few specific interventions and conditions were found. This is noteworthy, especially because in the case of spontaneous informal learning, the actual learning sometimes only takes place when reflecting on what was being learned. Many tools are available for evaluation of formal training, and more instruments are being developed for assessment of informal learning outcomes (e.g. EVC; portfolio's). These are not very specific for self-managing work teams.
- In supporting the team members in *managing their own learning process*, the role of the team leader is again very important: he can support this activity by influencing the degree to which team members consider themselves responsible for their own learning and development, by creating room for learning and by supporting them hands-on. Moreover, organising the learning function in a transparent way is considered important in this respect, so that people know where to turn to for help. It was difficult to find examples of material support for this activity (only personal development plans).

Conditions for learning

Next to the more explicit interventions, aimed at supporting learning, general conditions also greatly influence learning activities within teams, as became clear from both the group interviews and literature. Conditions were distinguished on the levels of:

- The organisation (the degree to which the organisational context is based on self-management principles; and the way in which top management communicates a vision on self-management and learning);
- The team (team leader style, team size, reward systems and team composition);
- The workplace (job latitude and variety);
- The employee (motivation and competence).

Organisation of support for learning

Activities with regard to supporting learning need to be organised to some extent. It is considered important to achieve some level of organisation of the learning function, in order to increase transparency, and to help safeguard that people actually fulfil tasks related to supporting learning. The learning function (as the collection of tasks related to supporting learning, and people performing those tasks) is considered to be a diffuse and amorphous integral element of the team (flexible, largely invisible, one or two contact persons, inexpensive). Different learning-related tasks can be performed by different people; who then together form the 'physical manifestation' of the 'learning function'. Most people who can considered to be part of the learning function - in the sense that they carry out activities to support learning processes - fulfil these learning related tasks as an integral part of their work. If a firm has HRD staff, they are the only true 'learning specialists' within the learning function.

In general, group interviews and literature suggest an important role for the team leader in supporting learning, especially with regard to informal learning in the work place. He can foster favourable conditions for learning in the workplace, and provide hands-on support in formulating learning needs and in creating learning opportunities. Team members are expected to fulfil an active role with regard to their own learning, and to be actively involved in learning processes of their co-workers (for example as mentors or trainers). HRD staff can fulfil a role within the learning function by providing advice and supporting team leaders in creating a positive learning environment within the team, and by providing tools and (formal) learning opportunities.

It was suggested by interview participants to organise support activities for learning in a 'light' way, for instance by appointing a 'leader in learning' within the team.

Quality of the learning infrastructure

How can we determine if a team's learning infrastructure is functioning adequately? This question was posed to interview participants. The discussion revealed that respondents feel that it is essential that support for learning is provided in such a way that this not only results in effective learning processes (linked to team and organisational objectives), but also encourages and supports the team and its members to be self-managing with regard to their own learning. In other words, providing support should not result in 'taking over' control of the learning process.

In order to determine whether a learning infrastructure is adequate, or whether there is room for improvement, participants suggested to consider both indicators that reflect a certain skill in learning, and /or a certain positive attitude to learning (such as: do team members easily ask for feedback?), as well as outcome indicators (such as personal development or quality of process improvement plans). Both types of indicators might be used in order to determine whether team members receive enough support for learning, and if conditions for learning are good. If they do not, it becomes relevant to consider ways to optimise the learning infrastructure, according to participants.

5.6.2 Conclusions and follow-up

Originally, the objective of the group interviews and the literature review was to validate the tentative framework and to construct a 'blueprint' for the learning infrastructure of self-managing work teams, using the tentative framework that was developed on the basis of literature (see chapter 4). Especially the group interviews yielded important results in this regard.

First, regarding the validation of the tentative framework: results supported many aspects of the model, but also provided ideas for improvement (broadening the model to include conditions for learning). As a second – and even more important - result, the group interviews as well as the literature review provided much input for constructing a blueprint of the learning infrastructure of self-managing work teams: a large amount of supporting interventions, activities, tools and general conditions for learning within self-managing work teams were collected.

However, several issues still needed to be explored in more detail, in order to answer the research questions.

First, though great care was taken to collect empirical data in the group interviews (by using the critical incidents method), it has to be concluded that the discussion sometimes had more of a prescriptive, rather than a purely descriptive character. Empirical evidence and personal opinions and convictions were intertwined. It is always hard to 'isolate' empirical evidence from personal convictions in interviews, but especially in a group interview it proved difficult to control this process sufficiently. Making a conscious effort to separate practical experience from theoretical notions or opinions did not serve to solve the problem. In the initial stages of the interviews, actual experience was separated from theory, but during the discussion, both became intertwined again. And sometimes it was unclear *how much* empirical evidence was behind a suggestion. So, we cannot be certain that all of the results from the group interviews are indeed firmly rooted in practical experience.

With regard to the literature review, similar reservations have to be made regarding the validity of the learning interventions and conditions that were collected. Not all

of the suggestions on how to support learning within teams that were found in the literature have been tested in (experimental) research settings. They are primarily derived from practical experience, logical reasoning (based on knowledge, sometimes gained by research, of factors which stifle learning), the translation of general learning theory to work settings (see Kraayvanger & van Onna, 1985). Only to a small extent are they derived directly from research results (Onstenk's work contains most research-based information). Moreover, a proportion of the suggestions do not pertain directly to self-managing work teams, but were derived from more general literature on learning in the workplace, or HRD.

All in all, the nature of the findings is such that the empirical foundation for outcomes regarding elements of the learning infrastructure cannot yet be sufficiently guaranteed.

A second problem with regard to the results, relates to the large number of elements in the learning infrastructure. Though conscious efforts were made in the group interviews to pinpoint those elements in the learning infrastructure that can be considered as most important, these remained unsuccessful. So, it is still largely unclear which parts of the learning infrastructure are most crucial to supporting learning or whether all elements are equally important. In order to be able to provide practical recommendations on managing learning infrastructures in practice, such information is indispensable.

Thirdly, the picture of the learning infrastructure resulting from the group interviews and the literature review is very fragmented. To increase our understanding of the nature of learning infrastructures, it would be helpful to also have practical, integral descriptions of learning infrastructures in practice, showing 'the whole picture'.

Therefore, *case studies* were conducted as a next step, with the following objectives:

- Improving the empirical basis / validating the learning infrastructure framework;
- Pinpointing the most robust elements in the learning infrastructure;
- Increase our understanding of learning infrastructures.

Case study descriptions of three learning infrastructures are provided in chapter 6.

6 Case studies of learning infrastructures

To improve the framework of the learning infrastructure of self-managing work teams, case studies were conducted. For three teams, the learning infrastructure was studied, and described here to provide examples of learning infrastructures. First, the objectives and design of the case studies are described in section 6.1. Then, descriptions of the three cases are provided in the sections 6.2 through 6.4. And, finally, conclusions are drawn in section 6.5.

6.1 Objectives and design of the case studies

The literature study and group interviews yielded a wide array of ideas and descriptions of activities, people, interventions and tools that are important in providing support for learning and regulatory activities, as well as factors that generally influence learning (conditions). This served to expand the framework of the learning infrastructure of self-managing work teams. The case studies mainly served the following three objectives:

a) Validation: to further support this inventory of learning processes and learning infrastructure elements, by gathering (additional) empirical data;
b) Evaluation: weighing the different elements in the learning infrastructure, to discover which ones are most important;
c) Clarification: to understand more about the *nature* of learning infrastructure of teams (e.g. types of learning infrastructures, relationships between elements of the learning infrastructure).

With regard to these objectives, a multiple case design was chosen (see chapter 3). Three case study teams were selected, each from different companies. These companies differ from each other in several meaningful ways, as was described in chapter 3. Key characteristics are summarised in table 6.1.

The mixture of cases was considered important to help uncover the 'robust' elements in the learning infrastructure, that is: those elements that are important regardless of the organisational context. If an element appears relevant in all three cases, this increases the chance that it is important in general. This is important with regard to the validation objective (a), and the 'evaluation' objective (b). The variety

in cases also - in principle – allows for the possibility to uncover differences between learning infrastructures. This leads to increased understanding, which is relevant in light of the 'clarification' objective (c).

Table 6.1 Overview of case study companies

	Heineken	*Document company Xerox*	*Solvision*
Industry	• Manufacturing	• Service	• Service
Nature of company	• Beer brewery	• Sales & Service organisation for copiers, printers and fax machines	• ICT consultancy
Company's experience with self-managing work teams	• Implemented recently, history as a 'machine-bureaucracy'	• Implemented recently, history as a 'machine-bureaucracy'	• 'Greenfield' situation, company started in 1996, based on self-management principles
Team's organisational unit	• Packaging	• Service & maintenance	• Business Performance
Education level team members	• Operators: lower to middle vocational education	• Service engineers: middle to higher vocational education	• ICT consultants: higher vocational education or academic background

The framework presented in chapter 5 served as the basis for a data collection plan. According to this model, three basic variables were defined and operationalised to some extent:

1. Learning: processes whereby team members acquire and develop competences, required to fulfil their (current or future) job. Based on the literature review and the group interviews, a distinction was made between two different types of learning activities:
   - Learning activities:
     - Informal, on-the-job learning: intentional and unintentional;
     - Formal learning: on-the-job learning and off-the-job learning
   - Regulatory learning activities:
     - Identifying learning needs;
     - Evaluating learning outcomes;
     - Managing the learning process.
2. Support for learning: interventions, activities, measures or tools meant to provide support for learning within a self-managing work team. Based on the literature review and the group interviews, a distinction was made between:
   - Social support
   - Material support

3. Conditions for learning: characteristics of the team and the organisation that enable or hinder learning from team members. Based on the literature review and the group interviews, a distinction was made between:
   - Conditions at the organisational level
   - Conditions at the team level
   - Conditions at the workplace / job level
   - Conditions at the individual level

Information on all of these variables was collected, mainly by means of interviews and document study (see chapter 3). It has to be said that with regard to the *conditions*, data collection regarding conditions at the individual and workplace level was most elaborate. Conditions at the team level were also investigated, but on a more general level. This goes even stronger for conditions at the organisational level. Because of the broad span of these two levels (e.g. they contain factors such as organisational culture, management style etc.), information on conditions at these levels was collected in a general sense only. It would be fair to say that only sketches of the organisational and team context were made, not a complete, in-depth description. The aim was not to make such a comprehensive, in-depth analysis of the team and organisational context, but rather to assess whether they contain important conditions regarding learning within the teams.

6.2 Heineken

Before describing the learning infrastructure in the Heineken team, in subsection 6.2.2, a description of the organisational context is provided in subsection 6.2.1. Though the text is written in present tense, to improve accessibility, it has to be remarked that it is based on data from the fall of 1999, and therefore may not actually present the current situation within the company or the case team.

6.2.1 Organisational context

Outlining the company and its main philosophy provides a picture of the organisational context. The case study team is also described, as is the HRD function of the company.

The company

Heineken is a large international brewery, and market leader in beer production and sales in over 170 countries. Well-known brand names carried by Heineken include Heineken, Amstel, Buckler and Murphy's. Beer production takes place in over 100 breweries in 56 countries. The case study team is part of one of the Dutch breweries, Heineken Zoeterwoude. This brewery has a central staff and three major units: Production, Packaging and Shipping (expedition). The case study team is part

of the Packaging division: the organisational unit responsible for 'packing' beer in glass bottles or beer cans, and preparing the product for shipment.

Organisational philosophy

Heineken has been very successful for an extended period of time. However, during the eighties, some profound changes in the beer market occurred: consumers changed brands more easily, market growth stagnates and customers desired greater product diversity, while Heineken concentrated on one product only (beer). By the end of the 1980s, the impact of these changes on the organisation was felt very strongly. A sense of urgency grew: change was considered necessary or else the future of the company would be in jeopardy. By the end of 1991 first steps towards change were taken, with the 'People making Heineken' - programme. A central objective of 'People making Heineken' was to become a 'lean and mean', flexible organisation that would be able to respond (or anticipate) successfully to the changing beer market (Arens & Wegewijs, 2000).
With 'People making Heineken' as a central motto, considerable changes in organisational strategy and structure were realised. Central to the change process was the introduction of self-managing work teams (while Heineken originally resembled Mintzberg's archetype of the 'machine bureaucracy'). This concept was considered to have multiple advantages: responsibilities are placed on the lowest possible level in the organisation, bureaucracy and (superfluous) hierarchical layers disappear and, as a result, people feel truly responsible and committed because they are involved in decision making processes. A key notion behind 'People making Heineken' is the belief that people on the shop floor possess vital knowledge for running the day-to-day operations, and for realising process improvements. Therefore, it is essential to allow operators and other production personnel to use that knowledge. One of the managers describes it as such:

> 'To me, the essence of working with self - managing work teams, the *reason* for implementing them, is the belief that operators on the shop floor are able to make better decisions regarding their jobs than their bosses. After all, they are involved in this work for eight hours a day, five days a week. In the old days, they always had to go to their supervisor, while in fact they very often knew what was necessary to solve the problem at hand. Nowadays, the situation - ideally - is reversed: in case of a problem, the supervisor should go to the operators and ask them: what is going on, and what do you suggest to do about it?'
>
> (Excerpt from case study interviews)

Next to this business related objective, Heineken also considers the impact that self-managing teams are believed to have on the quality of work and employee satisfaction (because of the enhanced variety, task richness, co-operation and commitment) as very important.

After changing the major structure of the organisation (the first phases of 'People making Heineken'), task teams (self-managing work teams) were implemented

(Arens & Wegewijs, 2000). The idea that people 'make' the organisation was also reflected in the approach taken to the change process. People from all hierarchical layers were involved in the design and implementation of organisational changes. At the moment of data collection, all departments in Zoeterwoude had implemented self-managing work teams.

However, that does not mean that 'People making Heineken' is finished. The company does not regard it as a 'change project' with a fixed beginning and end, but rather as an integral, on-going organisational development process. Consequently, the structure is not static; the organisation is still 'in flux'. For instance, changes are still being made with regard to specific task division among teams, and with regard to communication procedures. The new way of working not only brings changes for operators, but also for supervisors and managers. Much has already changed for operators, as the following quote from one of the team members illustrates:

> 'A lot has changed since I came to work for Heineken. Not only the machinery has changed due to electronics and ICT, but also our way of working. Especially with these teams: now we have much more responsibilities. We used to work with 8 operators and one supervisor. The supervisor was responsible for disturbances of the work process and machine failures. Nowadays, we handle such things by ourselves. You really learn a lot from that. For instance, I know have a much better idea of how the line works, and how the machines function, than I used to have.'
>
> (Excerpt from case study interviews)

According to the Heineken philosophy *team leaders* are expected to pay attention to three areas: results (teams are a means to an end, production and quality targets are key), team development (helping the team to *function as* a team, in which people help each other, give feedback, work through conflicts, and all in all create a positive co-operation) and individual development (providing room for, and actively supporting individual growth). Even from members of the *support staff*, such as Maintenance and Quality Control, a different attitude is expected. It is expected of them that they do not to 'take over' tasks in this area from operators, but rather help teams solve those problems themselves.

Though people agree that much has been achieved already, enough challenges remain, such as:

- Developing the role of management: taking care that people really are given the room to solve problems and make decisions regarding work. Management has to learn to let go, and to support self-management not only verbally, but also by their everyday actions. There has been much attention for new skills and attitudes of workers, but managers and team leaders also need support (coaching, training) for their new role.
- Increasing involvement of workers: getting people to feel a sense of involvement, and to realise that their pro-active attitude is necessary and very welcome, so that they really start to take on responsibilities towards work,

quality improvements and personal development. This is by no means self-evident, as one of the HRD staff explains:

> 'This change takes effort. Sometimes I explain it by saying that we have to deal with a 'back log in our people maintenance' of some 30 years. We never invested much in people, machines got their yearly or monthly revisions, but workers didn't. And now we have to figure out what it takes to get them involved again.'
>
> (Excerpt from case study interviews)

Also, it takes time for people to get used to the idea that things do not go well 'by themselves'. Because of the successful history of Heineken, it is sometimes difficult for workers to accept that current market conditions are different, and that learning and change is really necessary.

- Changing the systems, supporting the work process, such as the information system, so that they fit the new way of working.

Case study team

Within the Packaging Division, several packaging lines can be distinguished, For instance a 'glass' line for bottles meant for the Dutch market, a 'glass' line for export bottles, and a line where beer is packaged in beer cans. The case team is part of the latter 'can' line. Beer is 'packed' in cans, for small or medium sized client orders, each order having unique specifications (with regard to the type of can, type of cap, order volume, etc.). For each client order, small alterations have to be made in machines along the packaging line in order to meet the order's specific requirements.

The case study team fits the definition of a self-managing work team as it is regarded within this study. It is rather independent with regard to the 'day-to-day' operations: keeping the line running, performing quality checks, solving disturbances and doing repairs, maintaining contacts with third parties (stock, clients). Clear targets have been set for the team, in the area of quantity and quality of production, and the team can monitor its own performance with regard to these objectives. For those tasks that transcend everyday work, the team falls back on the team leader, who performs tasks such as monitoring overall progress (not with regard to just one order, but with team performance in general), communication with higher-level management, and addressing special problems in the operation (such as difficult technical or logistic problems or conflicts in the team). The team leader tries to act as a coach whenever the team asks for help, that is: not taking control of the situation, but trying to help the team to solve the problem on its own. But he also sometimes assumes a more directive role, when the situation calls for this (e.g. taking a difficult decision, or intervening to solve a conflict). He also passes on relevant information from the team to higher-level management and vice versa. All in all, he makes a conscious effort to support the team from the sideline. For instance, team members make their own vacation schedules. The team leader does not interfere, but nevertheless monitors the process. Whenever he notices a possible problem (for instance, important people taking a holiday at the same time), he

points this out to the team, and asks them to find a solution. In his role of coach, he tries to help people find their own solutions, whenever possible. In other cases, he takes charge himself.

Team members all work as operators, though four different job levels can be distinguished (from junior operator to all-round operator). Most operators enjoyed a lower or middle level (technical) vocational education. Competences essential to their work depend on their specific portfolio of tasks. The core of their job is running and also 'managing' (that is: making changes in machine settings, doing repairs, maintenance..) different workstations in the production line. People rotate among the different workstations. The higher their job level, the more stations they master. Next to these core tasks, operators also do quality checks. They each perform the type of quality check inherent to the workstation that they happen to work at, at the time a check is needed (for example: at the 'filling machine', operators weigh the cans to see if they are filled according to the norms, at another work station they check if the cans are sealed correctly). Some operators also fulfil special team tasks (such as monitoring team logistics, or safety). Next to the competences, necessary to fulfil these types of tasks, it is also considered important that operators take initiative (pro-active) and are willing and able to cooperate with others.

HRD function

Heineken Zoeterwoude has its own training department, with four HRD staff. Training played an important role in 'People making Heineken'. It was seen as a driving force for change, and therefore, several training and learning projects were realised to support or even initiate changes (for example: a management training, workshops to support redesign activities, tools for development plans, etc.). The structure of the HRD department was also redesigned in the spirit of 'People making Heineken'. HRD staff has redesigned their own work systems and organisation so it is compatible with their vision that training is *management's* responsibility. Hierarchically, the four HRD staff are linked to the different department heads, but functionally, they are grouped together in their own department to allow for co-ordination and synergy. The different HRD consultants work for different departments, such as Brewing and Packaging. For their 'own' department they make an inventory of desired support (training, courses, tools) and provide this support. Team leaders are important contact persons.

6.2.2 Learning within the team

How do the team members acquire and develop competences? This section discusses the most important ways of (formal and informal) learning within the team.

Informal workplace learning

In general, workplaces within this team can be considered rich in opportunities for learning, due to several reasons:

- Variety in activities: workers rotate among the different work stations;
- Team work: workers do not operate in isolated functions, but they work together to keep the line running, and help each other when necessary;
- Variety in orders: the team works based on rather small, and very specific client orders. So line settings have to be changed for almost every order, to accommodate the order specifications with regard to type of cans, volume, etc.;
- Task richness: team members do not only operate the machines, but are all to some degree also involved in solving disturbances, mechanical failures and executing maintenance and revision jobs.

All of this increases the opportunities for informal learning, as one of the operators explains:

> 'In the beginning, I really had to adjust to the new way of working, in these teams. But by helping each other, and solving problems together, you really learn a lot. In the old days, when there was a machine failure, we would call a mechanic, and wait for him to solve it. Now, in case of a problem, I try to solve it myself and only call in specialised assistance if things get too complex. (..) I just learned a lot by doing things myself, and from the feedback of my co-workers.'
>
> (Excerpt from case study interviews)

That operators learn many things, informally, during work, appears to be a generally acknowledged fact within Heineken. The HRD department promotes that these informally acquired competencies are stimulated and made explicit. For instance, one of the operators in the team, with 22 years of work experience, still works at the basic function level (O1). He wants to grow to the next level (O2), and the team leader agreed with him that he will be tested first, to see if his competence level is adequate. The operator explains:

> 'We agreed that I will write down everything I know about the line: how do the machines work, what are common causes for machine failures and process disturbances, etc. This is really useful; it makes you think things through, even for those machines you do not work with very often. This is in itself a learning experience. When I'm finished, the HRD consultants will check my knowledge and skills. My team leader thinks this is not a problem, he expects I will be allowed a promotion to the next function level - O2 - very easily. I probably will not have to learn much extra. And then we can see if it is also possible for me to move on to O3 level.'
>
> (Excerpt from the case study interviews)

Learning in the workplace not only occurs unintentionally, sometimes team members and the team leader *deliberately* choose informal learning in the workplace as a means for developing new competences. For instance: one of the operators agreed with the team leader to check the operating instructions for one of the machines, and to improve them when necessary. In that way, he discovers not only all of the 'ins and outs' of that particular machine, but also how to find more information on machines in manuals, how to find operating instructions in the computer and how to update such instructions. This agreement is basically a 'work agreement': an extra job, taken on by the operator. But it is also a 'learning agreement' that is written down in the operator's PDP, because it is believed to help develop competences that are important in light of this worker's wish to take on the function of 'trouble-shooter' in the future.
Other examples of often-used activities for intentional learning in the workplace include:

- Accompanying an experienced co-worker in his work, observing him, and - if possible- even assisting him. The experienced co-worker gives instruction and feedback;
- Operating as back-up for a person performing a specialised function, taking over his role in case of illness or related situations. In this way, the 'back up' learns about the function, and also gets the chance to practice it sometimes.

Important to note is that these kinds of 'learning arrangements' are usually chosen with the intent to learn those things that are difficult to learn within a more formalised learning setting, such as a course or training. For instance: discovering what type of behaviour is expected in a certain role, or getting to know the organisation better (also the informal, 'political' side of the organisation).

Formal learning

Next to informal learning, formal learning situations, such as courses and workshops, play a very important role within the team. Some courses, such as a safety course, are obligatory, and taken by every worker in the organisation. But workers also engage in a variety of individual training activities. Some of those activities are a co-production between the internal HRD department and schools for vocational education, so that workers can acquire a national diploma. Sometimes, team-training activities are also organised. To provide an example of the latter: operators frequently ran into questions concerning the quality control of the seam between can and cap. The team could not always answer these questions, and therefore they requested the company that supplies the cans to organise a workshop on quality control for seams. They also arranged that, after the workshop, an expert from the supplier came over to accompany the workers on the shop floor, and provide 'hands-on' assistance and instruction.

On-the-job training is also a very important way of learning within the team. At the time of data collection, the company was in the process of developing a new system for on-the-job training, called Operator 2000. This system will contain a complete

set of learning materials, instructions and tests for nearly all of the workstations in the production units (for a description see material support).

The company's training information system, Edumanager, shows that the 'coverage' (the number of people engaging in formal learning activities) is quite high. Last year, there was even one employee who had attended seven courses in one year. But that is, of course, an exception. In general, however, workers attend several courses, though there is also a group who is somewhat weary of off-the-job training, and prefers more informal learning opportunities (or is not open to learning at all).

Comparison of learning processes

In comparing the different ways in which workers develop their competences, it becomes apparent that team members and the team leader appreciate the opportunities for informal on-the-job learning. People feel that they learn a lot during work, because of the co-operation with others, the variation in orders, job rotation, and because workers are actively involved in solving disturbances of the work flow, and maintenance operations. HRD staff underlines the importance of informal learning, but also points out that formalising these activities to some degree is important, to safeguard quality. As an HRD consultant explains:

> 'People learn a lot here, informally, but the learning also withers away quite soon, and slowly but surely you can see the standards being lowered. Operator 2000 is meant to set explicit norms for performance, together with the people: how should this machine be operated? How are these maintenance jobs supposed to be executed? Setting the norms together increases coherency, and supports the 'master - pupil' idea. Because of the testing, you help to safeguard the quality of worker's mastery of the tasks. Previously, we had instructors, but we did nothing to safeguard craftsmanship. This was entirely dependent on the qualities of the individual instructors. Operator 2000 is meant to protect the quality of what is being learned. So that we can be sure that people really have the opportunity for further development, and that we as a company have workers with a broad range of skills.'
>
> (Excerpt from the case study interviews)

Individual responsibility for learning

In contrast to the situation of a few years ago, when the HRD department carried a large responsibility for personnel development, workers nowadays are considered to take on responsibility for their own learning process. Worker and manager take the lead, and the HRD department seeks to support them, both in a reactive (responding to requests for training or tools) and in a pro-active fashion (responding to new developments, offering concrete suggestions and tools).

6.2.3 Learning infrastructure

This section characterizes the learning infrastructure of the Heineken team, by describing both material and social support for learning, as well as the most important conditions for learning.

Support for learning

Social support

Important support for learning in the workplace is offered by *co-workers* in the team. Whenever the line is blocked because of a (possible) machine failure or other disturbance, a red lamp lights up over the workstation that is involved. When that lamp stays on, workers from other stations often come over to see what the problem is, and how they can help to solve it. Moreover, team members play a role as instructor, coach or mentor both for informal learning arrangements and more formal training programmes.

The *team leader* fulfils an important role with regard to identifying learning needs and planning learning activities. He makes PDP's together with workers. Moreover, he coaches the team during work, trying to help them solve problems with regard to production or planning, by giving hints, asking reflective questions, structuring the decision making process. Incidentally, the team leader also coaches individual workers, by helping them with tough study-assignments. But more often than assisting the learning process in such a direct way, he tries to support it in a more broad sense, by safeguarding conditions for learning, such as time. For instance, if he notices that the team puts pressure on a team member to skip training, and to work instead, he tries to talk things through. Explaining the benefits for the team in the long term of that worker completes the training programme, etc. In short, he makes an effort to show his interest in personal development of team members, in order to stimulate their motivation for learning. Another example of such an effort is that he plans to increase the number of PDP-meetings with each worker, in order to better monitor progress, and to support the worker more adequately.

Support staff, such as quality engineers and maintenance mechanics, play a role in the background. In principle, when they are called in for complex disturbances, they are asked to help the team solve the problem (and learn about it at the same time), but it is not clear as to how this really unfolds. *Higher level managers* also play a role in the background. The head of the Packaging unit attempts to support team leaders in coaching the team, and in helping the team in learning activities. To this end, he tries to set an example in his own role (and in the way in which he coaches team leaders), and organises coaching and reflection sessions with his team leaders. Supporting team leaders in their role as coach is considered very important. They have followed a course to prepare them for their new role. But mutual consultation and coaching by higher management appear to be necessary in order to support the

subsequent 'learn by doing' in the work place. Learning from practical experiences requires reflection and feedback and advice from others. Because of the work pressure, it is difficult to find the time for this during work. Operational problems sometimes demand all of the attention. Therefore the manager tries to organise time for reflection and collegial consultation, but he is also exploring possibilities for on-the-job coaching for team leaders, to be organised by the HRD department.

HRD staff deliberately position themselves as consultants and facilitators. They adopted the motto 'learning is a responsibility of management and workers', and take care not to 'take over' any learning issues. Instead they try to support team leaders and teams in learning activities, both in a reactive, and in a pro-active fashion. *Reactive,* in the sense that they respond to demands for a certain type of training. For instance, they help to clarify the training need ('what exactly is the problem? Is training the solution? What type of training?'), and look for a matching training in the existing portfolio of courses; if necessary they buy in a training from outside. The HRD consultant assists in the decision making process, but it is the team leader who decides.
The HRD department not only respond to questions, but also tries to provide support *pro-actively*. They negotiate with external training institutions, in order to design training arrangements that lead to official national diplomas. They have also created an elaborate system for PDP's (and linking them to team and business plans), initiated and designed the Operator 2000 programme, and developed a training programme for team leaders, to assist them in their new role. In order to be able to work pro-actively, it is important that HRD consultants know what is going on in the teams. To that end, they take care to develop their network with the team leaders and training co-ordinators within the team (each team has a training co-ordinator who monitors training efforts). For instance, they often try to catch the team leader meetings.

Material support

Next to the social support, there is an extensive amount of materials, tools, courses etc. that people can fall back on for learning purposes. For instance, there is an elaborate portfolio of courses from which workers and team leaders can choose, team leaders can use an extensive PDP system to develop PDP's, a wide array of manuals and job instructions is available for learning in the work place, and an extensive set of materials for training in the work place (learning materials, tests) is currently being made within the context of the Operator 2000 programme.

An essential element in the current offer of training within the Packaging unit is the Operator 2000 programme. The objective of this intensive project is to create a durable, transparent structure for on-the-job training. Key characteristics are:

1. For operators, by operators: operators are actively involved in development of learning materials. A team of 10 are currently relieved from their operational jobs, to work as full-time 'writers'. HRD consultants act as process facilitators.

They manage and co-ordinate the overall development process, help the operators find appropriate structures and procedures for learning materials, provide them with useful writing and design techniques and tools, and so on. But the workers themselves actually write the materials. In this way, HRD staff hope to achieve that workers will feel ownership of the learning materials. In the past, operators were found not to use existing materials in the intended way, or they used the materials only on a very irregular basis. Also it was difficult to keep the material up-to-date. No one felt responsible. In the Operator 2000 programme, the operators who write the materials will return to their original jobs, when all the materials are ready. In their team, they will remain responsible for keeping the learning materials up to date. The rest of the workers will be asked to pass on any ideas for changes to them, and they have authority in the system to make any updates.

2. Abandoning the 'text book' model: learning materials will be available in electronic form only. If necessary, people can make printouts of certain materials. Workers can only make printouts per chapter. This is particularly useful for temporary employees, who come in to fulfil a certain specific job. By providing them with the chapter, relevant to their job, they immediately have an adequate job instruction, a real 'one point lesson'.
3. Transparency: every operator and manager has access to the system. People can find out for themselves what competences are required for each of the function levels. An operator who wonders if he can move on to the O4 level, can find the requirements for that level in the system. He can also look up the training materials for the machines that he will have to be able to operate. Thus, he can form an image of what is expected from him, and judge for himself whether he will be able to meet these demands.
4. Once training materials have been developed for all work places, workers will make training arrangements with their team leaders (this happens without the help of HRD staff, in principle). Each training arrangement consists of three elements (see also Arens & Wegewijs, 2000):
   - Self study of relevant training materials;
   - On-the-job training: working on-the-job, with the training materials, supervised and guided by an experienced operator. Every team has an experienced operator with instructional tasks, especially selected for his social and didactic skills;
   - On-the-job assignments: in addition to practising the job, learners have to make certain assignments in order to increase their knowledge of the work process and the machines.

   Whenever the learner thinks he masters the tasks sufficiently well, he can apply for a theory test. Even if the worker has not engaged in any formal training activities, but thinks he masters the job anyway through informally acquired knowledge, he can also apply. People are not obliged to follow a training programme. But they only get two opportunities for doing the test. If a person fails twice, an HRD consultant or the team leader ask for a meeting, to investigate what went wrong, and if (further) training is necessary. After the

worker passed the theory test, he can do the practical on-the-job test. After passing that, he can be certified for certain operator tasks.

Quality of support

In general, team members appear very satisfied with the support they receive. Especially the support from and coaching by co-workers and the team leader is experienced as very helpful and to-the-point. The PDP system appears to be appreciated and well-used also. As Operator 2000 is not operational yet, it is not possible to evaluate this programme. But it is expected to become a very important element in the team's learning infrastructure.

Conditions influencing learning within the team

Several factors influence the opportunities for learning within the team. Most were already mentioned in the description above. The most positive influences are:

- The nature of work: variety, opportunity to work together, richness;
- Motivation of team members for their own development: not everyone is highly motivated, but for those who are, this is an important factor;
- Role of the team leader: very dedicated to involving the team in problem-solving, tries to support the team in self-management.

Some more negative forces included:

- Reward systems: still more hierarchical, not result oriented;
- Organisational culture: the company as a whole is still not very 'learning' minded, not very open to change, due to successes in the past. The culture is also somewhat action oriented, leaving little time for reflection.

Work pressure is also a factor that sometimes endangers learning. In order to prevent this from happening, extra formation was added to the team, and the team leader actively tries to safeguard time for those operators who engage in training activities. With regard to the role of higher-level management, no specific strong influence on learning within the team was found.

6.3 Xerox

Before describing the learning infrastructure in the Xerox team, in subsection 6.3.2, a description of the organisational context is provided in subsection 6.3.1. Though the text is written in present tense, to improve accessibility, it has to be remarked that it is based on data from the spring of 2000, and therefore may not actually present the current situation within the company or the case team.

6.3.1 Organisational context

Outlining the company and its main philosophy provides a picture of the organisational context. The case study team is also described, as is the HRD function of the company.

The company

'Document Company Xerox', or - for short - Xerox, is a world wide market leader in products, systems, services and tools for 'document processing' and 'document management', such as copiers, printers and specialised software and maintenance services. Xerox, based in the US, operates in 135 countries. The head office of Xerox Netherlands has several departments, among which the Customer Service Organisation (CSO). This large company unit provides services and support for Xerox customers. CSO has several divisions, among which the Colour division, for products such as colour printers and copiers and related services. The case study team is part of this Colour division.

Organisational philosophy

Just like Heineken, Xerox Netherlands ('Xerox' from here on) has been successful with a more directive style of leadership for a long time. And, like Heineken, it also has a history in which lifetime employment was very common. In recent years, technological developments and changes in the market have led the company to shift to a different way of working, in which learning, and employee responsibility and involvement are key words. Xerox's management considers these elements essential if the company is to maintain its position as a market leader (which is a key strategic goal). *Learning* is an important element in the organisation philosophy of Xerox, as the following quote from its website illustrates:

> 'In order to survive as a company, we have to adjust quickly and flexibly to the constant changes around us. Or, better yet, we have to anticipate change. This is only possible if we acquire the new knowledge, skills and expertise that the new circumstances demand. Change = learning = flexibility'.
>
> (Source: website www.xerox.nl)

CSO's director underlines the importance of 'learning' in realising business objectives:

> 'Learning is essential, if you want to take the lead in the market. We have to keep looking for ways to improve what we are doing. That is the essence of learning, though it is not always considered, or 'labelled' as such (we use phrases such as 'improving our systems', or 'finding smart solutions', for instance, and not always about 'learning')'.
>
> (Excerpt from the case study interviews)

The importance attached to learning is fuelled by changes in different areas. First, the *market* of document management and printing is currently undergoing essential changes. For instance, clients generally tend to print their documents in a later stage, they read more on-screen. Storing and managing documents electronically is also an important area of growth. This makes it interesting for Xerox not only to invest in making better printers, but also to consider ways of supporting electronic document storage and use. An increasing amount of systems exists in this field, for instance for

categorising documents, making electronic summaries and 'docusharing'. Learning is considered necessary to keep up with these changes.

Another market-related challenge is setting adequate targets for service levels and response times. This may seem an innocent problem, but in reality it is quite difficult to set the right standards. As the director of CSO explains:

> 'Some customers do not mind if they have to wait sometimes, as long as they are sure that you will show up immediately whenever they have a *serious* problem. In this respect, every client sets his own standards, whereas we try to maintain one uniform standard. That is really difficult. And it is a good thing to give teams more autonomy in this area, and let them decide for themselves which client they will help first, using their knowledge on the clients. But we have to monitor this as an organisation, by setting norms. Experience has taught us that in those cases where clients appear satisfied, even though we let them wait consistently, we are very vulnerable to competition. If a sales manager from a competitor promises to respond much faster to a client's calls, this may suddenly appear much more attractive and cause this client to change products. So, we cannot allow the response time to be dependent totally on the judgement of our teams of engineers, we need to develop a policy as a company. (..) And we have to base that policy also on external developments, such as activities of our competitors. When we find that one competitor guarantees service within four hours, for instance, this has an impact on our own targets.'
>
> (Excerpt from the case study interviews)

So, service engineers have some room to influence their response times, responding to the specific client situation, but there are also common rules and targets. Some of the front line engineers participate in setting these common targets, allowing the company to benefit from their practical experience. In this way, a 'feedback loop' has been created, allowing the company to discover which targets are both realistic and at the same time challenging to competitors.

Next to market developments, *technology* for Xerox products is becoming increasingly high tech. With the increasing use of IC-T, the engineer's toolbox changes. Whereas mechanical tools - such as screwdrivers - used to be most important, now the laptop is an essential piece of equipment, used by engineers to solve disturbances and failures. Another development with very direct consequences for the work of engineers within CSO is the increasing 'connectivity' of Xerox products with client networks and computers. Consequentially, it becomes more difficult to detect the origin of any application failure (for instance: is it a failure in the appliance, in the computer connected to the printer, in the software, or is it a connectivity problem?). Linked to this issue is the question of setting boundaries for which problems Xerox wants to provide service: what type of problems does Xerox want to fix, and which are the client's own responsibility?

One of the managers explains:

> 'We charge the same amount for installing a machine as we did a few years ago, but we really need to find a new system for price determination (for instance increasing the price if we also have to change PC settings) At the moment, we are working on the development of such a system, using the input from the shop floor (engineers technical specialists, etc.). All in all, much is changing in our business, and it is pivotal that we keep each other informed.'
>
> (Excerpt from the case study interviews)

Keeping up with these technological developments requires an on-going learning process, especially for technical service engineers.

A second core element of Xerox's organisation concept is working with self-managing teams (or X-teams, as the company calls them), in order to increase:

- Productivity (faster response times for instance);
- Employee satisfaction. If workers are more involved in their work, have a better understanding of their job, and the relationship with that job and company objectives, the quality of work increases. The company takes worker satisfaction very seriously, and conducts a survey each year;
- Customer satisfaction: communication with clients is expected to go more smoothly when engineers are motivated and feel responsible, than it would when service operators would be 'sent' by a managers, and would not feel any ownership of the problem.

The change toward this new way of working is not so much regarded as a matter of 'implementing' self-managing work teams, rather it is approached by management as a process of continuously managing the balance between 'self-management' and 'centralisation'. Neither extreme of this continuum is considered very attractive. On the one hand, in a centralised, directively led organisation, learning capacity and knowledge of workers is felt to be not used enough. On the other hand, in a situation of complete self-management, cohesion is felt to be missing. Therefore, top management of CSO sees it as its main job to find the right balance.

The development towards self-management is regarded as a never-ending process, to be compared to a journey, in which one never arrives at the final destination. Maintaining and shifting the balance between 'centralisation' and 'self-management' is a key feature of that journey. Management cherishes these dynamics. Everything changes - markets, products, and technology - so the company will have to change as well. One of the managers explains:

> 'We have used different terms for the concept over the years: empowerment, semi-autonomous work groups, and self-managing teams… Nowadays we usually talk of X-teams. The central question remains: what boundaries do you set as a company? Personally I think we have managed to find quite a good balance between 'being the boss'

> and 'creating a consensus-culture', in which management or the team alternately take the lead.'
>
> (Excerpt from case study interviews)

The desired management style nowadays is more supportive and communicative than in the 'old days'. Managers are expected to discuss with their workers the market, targets and operations, describe trends, provide explanations for management decisions and ask for input from workers. CSO's director explains why:

> 'Communication on the market, competitors, and in general, the rationale behind certain targets is essential for increasing employees' understanding. And increased understanding of the company and its environment is a prerequisite for taking responsibility.'
>
> (Excerpt from the case study interviews)

Determining the degree and nature of autonomy of the teams is a matter of continuous (re) evaluation and adaptation. In part, deciding with a team upon those areas in which team autonomy is great, and those in which central directions are given, is a *team-specific* process. The degree of self-management for which a team is ready partly depends on things such as team maturity, composition of the team, developments in the team's work sphere (market, technology), etc. But of course, the degree of self-management is not only negotiated on the team-level. General decisions are also made regarding the amount of self-management within the teams, affecting the entire organisation.

Case study team

The case study team is part of CSO's Colour division. The team consists of service engineers, who help clients with the installation, maintenance and repairing any machine failures of Xerox products (such as printers and copiers). The team is rather autonomous in its day-to-day operations. Team members work mostly on an individual basis, solving problems or installing products on-site for clients, but do form a team in the sense that they fall back on each other in case of difficult problems. Moreover, they have shared targets, and work toward these targets as a team.

Some team members also participate in an engineer network (web) for a particular product. As such they do extra work to expand their knowledge base of a particular product. They specialise themselves in that product, and together with other engineers from the product network they:

- Collect knowledge on the product;
- Share this knowledge with others (other web engineers and team colleagues);
- Help other engineers solve difficult product failures.

Problems that are too difficult for a web engineer to solve are passed on to the national technical specialist. He is the leader of a network of web engineers for a certain product. If necessary, he can contact the European head office in the UK to

obtain more technical information on the product. He also has the responsibility to pass on new knowledge to the other engineers. And whenever useful advice is gathered on how to solve common failures, he takes care to add this knowledge to Xerox' Eureka database (a US based database, accessible to all technical Xerox staff worldwide, containing information on common product failures and solutions). Finally, the national technical specialist also supports product managers in new product launches and with product training. Management uses the specific expertise of technical specialists in setting product and service targets. They can help determine if certain targets are feasible. All in all, web engineers and technical specialists play an important role in building the knowledge base within Xerox.

Next to their technical work, some team members fulfil *team* tasks, such as leading a team meeting, or monitoring team performance for a certain product (and feeding this back to the team).

The engineers all have a technical background, and completed a middle- or higher-level vocational education. Main competences they need for their work are technical and analytical competences, flexibility and ability for self-management. But social skills also essential, both for co-operating effectively with other team members, and for communicating with clients. Management stresses that, as technology is becoming increasingly complex, and integrated in the client's computer system, it becomes more and more important that engineers know their own organisation well, and are willing to refer people to others. One of the managers explains:

> 'It becomes increasingly important that people know the organisation well, so they are able to refer clients to a colleague in another department, if they cannot help them out themselves. Engineers sometimes find this hard to accept. Previously, they were always able to help clients personally. But nowadays, problems are so complex, that it is impossible for one person to be able to answer all questions. That is a considerable change. I have to stop some people from becoming too broad in their orientation. Some are still determined that they should know everything about all products.'
>
> (Excerpt from case study interviews)

The team leader's role is performed by the service business manager, who also has operational tasks within the team. As a team leader, he serves as captain and coach of the team, fulfils HR tasks (including setting salaries and having PDP meetings), has an important role in the division of tasks with the team (determining which engineer services which product), and is involved in setting targets for the team. He also serves as a link to higher management, and a filter between the information system and the team. If teams have a need for information, they cannot always get this directly from the system. In those cases, the team leader (and the field operations manager, who supervises a number of teams) provides assistance.

HRD function

With questions regarding training, the Colour division of CSO can fall back on the Technical Training Centre (for technical issues) and the HR department (for the non-technical learning needs). Both departments co-ordinate and manage training budgets and organise training activities, or buy training from external institutions. The Technical Training Centre also develops learning materials and instruments.
The strict distinction between 'technical' and 'non-technical' learning needs and training programmes is fading. The technical training centre is increasingly also engaged in training in areas such as preventing stress and burnout, ergonomics and social skills. Such 'soft' skills are becoming more important, and training in this area is requested more often.
The training department's mission is: 'making available the technical knowledge that engineers need to do their job well'. The term 'making available' was chosen deliberately, to underline the view that the organisation can offer knowledge, but learning requires an active role of employees themselves in acquiring new knowledge. The technical training manager, and two HRD staff run the department.

6.3.2 Learning within the team

How do the team members acquire and develop competences? This section discusses the most important ways of (formal and informal) learning within the team.

Informal workplace learning

The heart of engineer's work consists of solving problems. So, by their nature, their jobs are very rich in learning opportunities. Engineers also indicate that work is a very important source of learning, they sometimes feel as if they are always learning. One estimates that 80% of the work consists of common failures, that are relatively easy to solve (professional routines), but 20% of the problems are new, and lead to learning. An example of an unintentional learning process, as experienced by one of the engineers

> 'One of our machines prints from a roll of paper. The printed sheets are compiled in a stacker. With one of our clients, this stacker started functioning badly. They also had another problem, which I passed on to a colleague. Personally, I focused on repairing the stacker, but was not successful. I took the stacker apart, looked for technical information, and placed many calls for extra information and help, even to the manufacturer. Despite all of my efforts I could not find out what was wrong. Eventually, it turned out that the second problem - the one I had passed on to someone else - was actually *causing* the stacker failure. Once we found that out, solving it was easy.
> Inadvertently, I have learnt a lot from this experience. First, because I turned that stacker inside out, looking for a solution. Now I know it

> through and through. But more importantly, I learned that it is essential to check whether separate problems are not interrelated, before you allocate them to different persons.'
>
> (Excerpt from the case study interviews)

Learning is not only a natural 'by-product' of the engineer's daily work. Team members also *deliberately* use learning opportunities that the workplace offers, to further their own personal development. An illustrative example comes from one of the engineers, who aspires the function of national technical specialist in the future:

> 'I agreed with my team leader to grow towards the job of national technical specialist. Three years ago I was 'just' an engineer. Then, I heard that they were looking for people to participate in a web for one of the products I was servicing. That sounded attractive to me, because as a web engineer, you meet other problems (more difficult) and you learn more. I enjoyed the job so much, that we decided that I will grow on to become a national technical specialist. In order to prepare myself for that role, I am now the current NTS' backup: whenever he is absent (for a holiday or a sick leave, for example), I take over his role. At the moment, I am filling in for him, for a period of two weeks, trying to answer the questions that are meant for him. Really difficult, and rather tough at times, but I learn a lot.'
>
> (Excerpt from the case study interviews)

Other examples of common activities for increasing learning in the workplace include:

- Participating in a 'web', a network of engineers who specialise themselves in a particular product, this helps to increase product knowledge.
- Practising on certain difficult machine features, or unsolved machine failures. All web engineers are specialised in one family of products. Engineers sometimes use machines in the Customer Training Centre for practice and experimenting with new solutions. Also, it sometimes happens that they replace a defective machine part, so that the client's problems are solved, but take the defective part back to the office, to puzzle on it later, to see what caused the failures.
- Taking on new, 'challenging', projects, for example, servicing a new product. In those cases an engineer knows on beforehand that the first period will be very intensive, many new, unknown failures will occur, which he will have to learn how to solve, hands-on (learning by doing). Not all product failures are known before the launch of a new product, much of this knowledge is gathered in practice.
- Participating in a special project team, or joining the editorial team of an internal news letter, in order to practice social skills, and learn more about the organisation

Formal learning

Formal learning also plays an essential role in building engineer's competences and keeping them up-to-date. For every Xerox product, a special product training exists, as a means for engineers to get acquainted with the particular product. Engineers take such a course whenever they start servicing a certain product, to prepare themselves. Engineers also regularly follow Computer Based Training modules (CBT's) on an individual basis, to expand and keep their IC-T knowledge up-to-date. These two types of technical training constitute the most important form of formal learning. Other courses (e.g. in non-technical areas) are also taken, but not on such a large scale.

Comparison

The different types of learning activities all have their own specific added value. And each is appreciated for a specific, different reason. The engineer's daily practice is also an essential source for learning. The team leader:

> 'The actual work is the most valuable source for learning. In general, people learn a lot from their jobs, also because they tend to reflect on what they meet in practice (..) Most learning needs stem from specific job experiences, and ensuing conversations on these experiences. (..) As such, the day-to-day job is the most important 'engine' for learning.'
>
> (Excerpt from case study interviews)

But the more formal learning opportunities are a very important addition. One of the engineers:

> 'The product training provides a solid basis. Afterwards, you learn a lot from daily work, just practising and experimenting. And every now and then, you take a CBT to expand certain specific ICT knowledge.'
>
> (Excerpt from case study interviews)

Individual responsibility for learning

Learning is explicitly considered an integral part of the engineer's work, especially by management. Learning is considered necessary to keep up with the high speed of technological developments in the branch. Both the products that engineers service, and the tools they use, are changing. ICT and computers are replacing mechanical features and tools. Next to a screwdriver, every engineer now has his own laptop, which is packed with service and product information, diagnostic tools, technical service manuals (Edoc) and which, in the near future, can also be used to email colleagues and managers. Every engineer is expected to keep his own technological knowledge up-to-date. Moreover, management considers learning as an essential element in realising improvements and innovations in current processes and systems.

But team members themselves also appear to see learning as an integral part of their job. There seems to be a difference, however, between more experienced workers and their junior colleagues. One of the managers explains:

> 'The younger generation has a higher awareness of the need for learning, and regards it more strongly as an individual responsibility. People who have been working with us for a longer time sometimes still tend to regard the company as responsible for ensuring work. But in reality, job security is rapidly diminishing. People do not spend their entire careers for just one employer. Young people are very aware of this, and subsequently, they see a large responsibility for themselves in keeping their competences up-to-date.'
>
> (Excerpt from case study interviews)

So, the company places responsibility for individual development largely with the employees. With the end of lifetime employment, it is essential that workers keep up their competences, and thus remain attractive for employers. In the case of product related knowledge, Xerox seeks to provide facilities for learning, such as time and money. Learning is regarded a joint responsibility in those cases.

Xerox takes deliberate efforts to stimulate awareness of the importance of learning in keeping abreast of developments, as a technical organisation, and to increase worker's sense of responsibility with regard to their own learning and development. The most prominent effort in this respect was the introduction of a 'learning duty', in 1997. This measure had a high symbolic value; in practice, it means that every employee is expected to work deliberately and actively on his or her own development (general objective). As a very concrete spin off of the learning duty, all employees were expected to engage in a basic course for computer literacy (computer's driving licence', Windows, Word, Excel). As a more general effect, the measure did serve to place 'learning' higher on the agenda within the company as a whole. Especially the obligatory character has sparked discussions, and thoughts on learning. In the case study team, members see learning as an natural, and integral aspect of their work, and do not appear to experience it as an 'obligation'.

6.3.3 Learning infrastructure

This section characterizes the learning infrastructure of the Xerox team, by describing both material and social support for learning, as well as the most important conditions for learning.

Support for learning

The engineers' work is largely individual in nature; most of the time they work on-site, in the clients' organisations. Nevertheless, team members constitute an important source of support for learning in the work place. Team members learn much from each other in the following moments:

- When calling each other for help to solve difficult machine failures.
- During team meetings; the team meets once a month to exchange advice, experiences and the latest news on solutions.
- By going on a 'call' together, in that way people also see each other work, and can ask questions / provide feedback.
- Sometimes team members also meet informally, for instance when they are working for the same client at the same time, or when they are doing calls in the same area.

A factor that stands in the way of learning from each other, is the fact that team members sometimes hesitate to ask for help. Previously, engineers were more self-sufficient. Technology was less complex, and there were less products and - subsequently - less possible failures. As mentioned before, nowadays, it is impossible for an individual engineer to have all the answers to all possible failures: the technology of Xerox products is far more complex, and these products are linked to client's computer systems and networks, which dramatically increases possible reasons for failures. So, engineers can no longer be generalists, knowing everything from all products. They have to seek help sometimes. But people are sometimes embarrassed to do so; they would rather solve the problem themselves. Or they do not want to bother their colleagues, because they know them to have a busy work schedule.

The team has several ways to help engineers overcome their hesitance to ask for support:

- An agreement: if an engineer cannot solve a problem within 45 minutes, he has to call a team member, or a web engineer for advice. If this advice is not sufficient, and the engineer is still working on the problem after another two hours, the web coordinator (national technical specialist) comes over to assist in finding a solution. In some cases they decide to handle the call together, in other cases the engineer leaves, and is later informed by the web coordinator on how he solved the problem. The engineer reports his experiences to the team, in a team meeting, and shares his new knowledge.
- Responding actively to signs that help is needed. If an engineers consistently needs too much time to handle his calls, his performance indicator levels will reveal this. The team leader and the field operations manager do not really 'check' on how engineers are doing, but they do monitor performance indicators. If an engineers performance falls behind targets, they contact the engineer to see what causes this: the reason might be certain features of the machine that he services, or specific client characteristics. But lagging performance levels may also indicate a learning need of the engineer.

Technical specialists also fulfil an important role in supporting learning. Web engineers learn much from them, for instance during web meetings, or when they call for help in difficult product failures. But the 'regular' engineers also fall back on the knowledge, gathered by the specialists. The specialists also maintain relations with the European head office in London, where more background information on

products can be obtained. And finally, they also feed the Eureka system with new advice, thus assisting the engineers indirectly.

The *team leader* actively supports learning, mainly by:

- Monitoring learning needs, among other things by analysing engineer's performance;
- Helping the engineer to choose appropriate learning activities;
- Monitoring progress with regard to learning agreements;
- Assisting team members in managing their personal development in the long run, by stimulating growth, or by slowing down their aspirations (focusing on current job responsibilities). The team leader also has a better overview of growth opportunities outside of the team, or even outside of the CSO division. But it has to be said that, though he looks out for the individual development needs, he deliberately tries to balance individual team needs. In deciding who will service a new product, for instance, the team leader makes the final decision, taking into account engineer's wishes.

Learning contracts, and the accompanying meetings, are very important in realising these learning related tasks. Once a year, the team leader discusses progress and learning needs with engineers, and they decide upon learning activities (all kinds). Agreements are written down in the learning contract (or personal development plans). Every six months, a progress meeting is held, to monitor progress. They also meet up with each other informally. The team leader even wants to increase the frequency, in order to increase his support. Team members appear to see the learning contract as a real help in managing their own learning process. They feel that they carry responsibility for their own development, and that they can exert a certain amount of influence with regard to the direction of their development. But managers also exert influence. They use the learning meeting to link learning needs of team members to team needs. Next to this, the team leader provides hands-on feedback to the engineers; sometimes he joins them in their work, and gives advice and tips. Moreover, he tries to stimulate learning from each other, and to facilitate a free exchange of knowledge within the team (e.g. by allowing team members to do a call together).

The team leader and the field operations manager help engineers to choose for intentional informal learning activities, especially during PDP-meetings. They appear to have a critical eye for those experiences that are really promising learning opportunities, and those that are not. They also take care to safeguard good learning conditions. The team leader:

> 'Especially when they first start out in this job, or in a certain product, engineers really just want to walk along with an experienced engineer, and learn by 'looking over his shoulder'. But the good engineers are not by definition also good instructors. So instead of having novice engineers, or engineers who take on a new product, watch experienced colleagues, I have them take their own calls. They learn more from the actual hands-on experience. If they join an experienced colleague, mostly

> they end up watching him doing all the work. In that way, the learning is limited. I rather have engineers do simple jobs themselves, right after they finished a product training, so they gain hands-on experience. Of course, it is important that they have time for experimenting and learning, so the pressure should not be too high right from the start. Therefore, we send them to relatively simple jobs, and take care that they do not get too many calls on one day. Installation of a new machine, for instance, that is a good opportunity for practice. Also, a large part of our job is maintenance, which is also very suitable for first experiences. Solving actual machine failures is more difficult. Protocols aren't always available for all problems, and the pressure is greater because the client is waiting for a solution to his problem.'
>
> (Excerpt from case study interviews)

CSO's top level managers have a greater distance from the engineers, but also try to support learning in general, by:

- Actively stating that learning is part of the job, that learning from each other by asking for help and exchanging knowledge is essential to keep abreast of technological developments.
- Stimulating moments for reflection: for example: top management has recently implemented a checklist for team development. Teams can use this list to reflect on their own performance. Top management sees stimulating reflection and discussion as a good way to trigger learning.
- Facilitating learning by offering concrete tools for communication and knowledge development (cell phones, lap tops, information system, etcetera)
- Ensuring availability of specialists.

A very interesting initiative from the director of CSO is the recent introduction of a newsletter, Techknowlogy, highlighting interesting technological developments. With this newsletter, management intends to increase the awareness of the importance of continuous learning, and the need to keep abreast of new technological developments. It was decided to take the inherent interest of engineers in technology as a venture point for stimulating this awareness and to foster their motivation for building new knowledge and realising innovations. As a kick-off activity, a visit to a technology museum was organised, where engineers reflected on changes in technology in recent years and the more distant past. The newsletter is intended to stimulate this reflection on an on-going basis, and to build on the enthusiasm engineers have for technology.

The Technical Training Centre and the HR department provide specialised support, especially in the field of formal training opportunities.

Material support

Next to the social support, the material support is very important in Xerox. For example, the information systems *Edoc* and *Eureka*. Engineers use these resources to

help solve difficult technical problems and to increase their technical knowledge. The *learning contract* forms an important instrument in managing personal development. The company is still working to develop a competence profile to support the learning contract (the Technical Training Manager fulfils an active role in this respect).

Xerox also offers a range of courses and *training modules* in order to foster the professional development of its engineers. The most important of these formal learning activities are:

- *CBT's* (Computer based training modules). A wide array of standard training modules is available on CD-rom. These CBT's are compact, clear and ready to use. Each CBT addresses a clear-cut and focused area of knowledge in the field of IC-T (which constitutes basic professional knowledge for the engineer). Every engineer has received a CD-rom with an overview of CBT modules, and can check individually which ones are most interesting for him. A request to follow a CBT can be put to the Technical Training Centre, where engineers can borrow the CBT's. This centre monitors course usage by engineers, and also keeps a record of those engineers that successfully passed the accompanying tests. They pass on this information to the team leader. Originally, CBT's were meant as pure self-study materials, but recently, the Training Centre has also appointed experts and personal coaches to assist engineers in their CBT activities. The experts assist engineers by solving content-related questions (via email or chat), and the coach specifically supports the learning process itself..
- *Product training*: for every Xerox product, the company has developed a special 'product training', which every engineer takes before servicing this product. A product training contains basic knowledge on the machine, maintenance procedures as well as common failures and protocols for solving them. In newer products, the latter part is less well developed than in training programmes for products that have existed longer. For familiar products, the company has a greater experience base, and more is known about failures and how to solve them. This knowledge is subsequently incorporated in the training. In the case of new products, little is yet known, and the engineers have to build much of their product knowledge in practice: experimenting with solutions and sharing knowledge with other engineers.

  Product training provides engineers with the basic knowledge, necessary to service a certain machine. They are developed and provided in-house, engineers receive instruction, practice on the machines and at the end take an exam.
- *Non-technical training*: the HR department also provides core training activities for non-technical training needs. Engineers can sign on for these core courses, in fields such as presentation skills, management, finance, social skills, etc., but they can also apply for an individual training activity.
- Finally, the HR department and the technical training centre also organise *ad hoc workshops*, on special request. For example, recently a workshop was organised on the topic of connectivity (connections between Xerox products and computer networks of clients), by the technical training manager.

Quality of support

In general, engineers appear very satisfied with the support for learning. Both with regard to the social support, but also for the material support, especially with regard to formal training. CBT's are highly valued by the engineers, for being compact and clear. But they also have disadvantages. For instance, engineers find it hard to apply the knowledge learned in day-to-day practice, and if not used, the knowledge threatens to disappear. Passing the CBT test is no guarantee that knowledge is 'stored and remembered forever'. Knowledge which is not used is easily forgotten. Therefore, some engineers suggest organising 'refreshment' workshops, where engineers can ask their practical questions, and knowledge can be refreshed. The experiences with the newly implemented expert support for CBT's so far are very positive, the personal support helps learners to keep up the speed in the learning process.

A similar story goes for the product training. Engineers are very satisfied about the courses, but follow-up workshops would be welcomed there. Practice always differs from what was taught in the course, is the engineer's experience. Also, some only know what questions they really have when they actually work with the machines, what aspects of the job are really challenging. During the training, their experience is still too limited to make an accurate assessment of such issues.

Conditions for learning

More general conditions also influence learning. First, the management team pays much attention to communication on the importance of learning. It deliberately stresses that learning is an important responsibility in different ways. For example by visiting team meetings, introducing the 'obligation for learning', implementing instruments that foster reflection, organising informal activities to stimulate reflection and discussion on technological developments (e.g. a newsletter).

The team leaders appear an important force for learning, in the sense that they are both supportive of learning, and give the team members freedom for experimenting and personal development. The organisational culture appears an influence of a mixed nature. On the one hand, the task-oriented culture of the company is very positive, since it fosters learning. On the other hand, not all employees see learning as a personal responsibility, they expect the company to 'care' for them (though this was not found to be so in the case study team). The technological, engineering culture sometimes makes it difficult for people to ask for help, people are used to being able to work independently. On the other hand, this solution-, puzzle oriented style of working also is a positive influence. People learn much from their work, because they do not give up easily.

The nature of work is another issue: by its nature it is rich in learning opportunities. Engineers meet many new types of failures, challenging them to develop new solutions. The work pressure sometimes stifles learning.

Finally, a very important driving force for learning is the individual motivation of engineers. They are very motivated for their work, and for their personal

development. Management appears to build on this natural drive for learning, by implementing measures such as a learning contract and the Eureka system.

6.4 Solvision

Before describing the learning infrastructure in the Solvision team, in subsection 6.4.2, a description of the organisational context is provided in subsection 6.4.1. Though the text is written in present tense, to improve accessibility, it has to be remarked that it is based on data from the spring of 1999, and therefore may not actually present the current situation within the company or the case team.

6.4.1 Organisational context

Outlining the company and its main philosophy provides a picture of the organisational context. The case study team is also described, as is the HRD function of the company.

The company

Solvision's core business is consultancy and project management in the field of Information and Communications technology (IC-T). The company was founded in 1996, and has grown exponentially since then to a staff of 260. Solvision resembles Mintzberg's prototype of the adhocracy, in which highly educated and independent professionals work on projects, in different teams.
Solvision is part of a network of organisations called the Vision Web. All partners in the Vision Web share the same organisational philosophy, but each provides different services and products for different IC-T related topics. The boundaries between the Vision Web and Solvision are blurry, the connection between the different network partners very strong. (People sometimes talk about 'Solvision', while actually referring to the Vision Web as a whole.)

Organisational philosophy

Solvision was founded by three consultants with the intent to:

> 'Build a company in which people work together with pleasure and enthusiasm, and where –instead of structures and rules - human ambition and talent are key factors.'
>
> (Source: information brochure Solvision)

Individual responsibility, entrepreneurial spirit and self-management are leading concepts in the organisational philosophy. A static or bureaucratic organisational structure does not fit with such vantage points. Instead, the company has a dynamic and organic structure, it is a network organisation built around business projects (which can be regarded as self-managing work teams). These projects, or teams, operate as miniature companies.

Neither Solvision, nor the Vision Web, have strategic company goals, objectives are formulated on the business project level only. Together, the financial targets for each of the business projects form Solvision's aggregate financial targets. More qualitative objectives are formulated only on the team level, and are not translated into a business strategy on the company level.

Solvision's organisation is characterised by a minimum amount of specialisation. No specialised functions are defined, only 'roles'. People in the business projects each fulfil three roles: those of professional, entrepreneur and shareholder, and they have responsibilities and rights with regard to each of these roles. The aim is to integrate, as much as possible, all of those functions that are normally divided over different (groups of) people (management, staff, workers in the operating core). Thus, there are no separate managers, apart from the six top-level managers, the 'Web Makers' (who regard themselves not as 'bosses', but rather as networkers and coaches). There are no separate account manager functions, or content matter expert positions. Likewise, Solvision also has no specialised staff such as personnel or financial managers, or support staff, apart from two office managers, who provide general support in the head office (taking general phone calls to the company, welcoming visitors etc.). Depending on the circumstances, people fulfil certain specialised roles (for example the role of business project manager, or the role of account manager), but this is always on a temporary basis. In a next business project, or even within the same business project, but in another phase of its life cycle, people can take on other roles.

This flexibility is an inherent feature of Solvision. People change roles frequently, and business projects are always of a temporary nature: they exist for a number of years, until the market is no longer interesting enough, or until people in the business project start looking for new challenges. New business projects are started up on an on-going basis, sometimes even resulting in new companies (which is how the Vision Web evolved: a broader network than Solvision). This dynamic situation stems from a strong drive for innovation. Solvision is a network organisation, which is another way in which the company is dynamic. In a network organisation, two forces can be identified: convergent and divergent forces. Managers within Solvision indicate that the tension between the two is tangible. The drive toward convergence is observable in recurring requests for more structure and a higher degree of organisation, while the drive towards divergence is expressed in the existence of chaos. There is no static balance between the two forces, rather, the company is always moving between both sides of the continuum. Management considers this movement necessary to maintain a 'vibrant' organisation. A force currently influencing the balance is the changing nature of people joining Solvision. The pioneers, people who joined the company in the early stages, are described as 'true' entrepreneurs. With the expansion of the company, the organisation finds itself also attracting people who are not only attracted to room for self-management, but also seek some degree of structure and a certain amount of hierarchy. One of Solvision's top managers describes the difference as one between entrepreneurs and

intrapreneurs. As a result, at the time of data collection, there was more discussion then before regarding the question of co-ordination and structure. This is, of course, also influenced by the growth of the company, which makes co-ordination an attractive option from the viewpoint of efficiency. Characteristic of Solvision is that the company tries to keep the discussion on the organisation's structure alive. Especially the Web Makers invite people to join in the conversation on the company's main norms and values, and the way in which these can best be realised (also in terms of organisational aspects). They feel it is very important to keep this discussion alive, so that everyone can participate in the development of the organisation. This dynamic nature and the organic and evolutionary way in which the company grows and develops, are explicitly formulated in the Vision Web's motto: 'People meet, minds explore, the vision unites, communities are born, turning talent into enterprise. As one circle matures, a new one comes to life…'

Solvision's head office in Delft mainly serves as a meeting point. The ground floor houses a Grand Café, which serves as a place for informal meetings. Most of the building is filled with flexible individual workspaces, and with group meeting rooms. The actual work place of Solvision's staff is not in Delft, but at home, or with the client. Each employee has his or her own mobile phone, laptop and other (communication) tools that are necessary for work. Next to face-to-face contact, an important way for consultants to stay in touch is Solvision's Intranet. All the essential information (content information, financial and commercial data) on the business is located here, accessible for members of all business projects.

Case study team

The team that is central to this case study is the business project 'Business Performance' (BP). Its core business is ICT consultancy in the area of data warehousing and release. BP resulted from a merger of two other business projects: Information Architectures (technology oriented, focusing on building ICT systems) en Management Support (business oriented, focusing on systems use). Business Performance (BP) aims to offer integral support to clients, helping them to use IC-T in order to collect and use information in order to improve their business.
BP can be regarded as a self-managing work team as it is defined in this study[i]. It is nearly for a 100% responsible for its own management, and can be characterised as a self-managing work team with the emphasis on self-management. The team aspect is also an essential, but less dominant feature. The team members do have a shared objective (seizing a new market opportunity in the area of data warehousing), and they need each other to realise this objective (because of their complementary expertise), but they do not work together as a team on a daily basis. Much of the work takes place *with* the client, on-site, in different small project teams. More often than not, consultants work on a job individually, co-operating more closely with members of the client organisation than with members of their own team.
The fifteen members of BP are self-managing to a high degree, also with regard to their own development. They each need different types of specific competences for

their jobs, depending on their specialisation, but on a more general level, everyone needs content matter expertise (in the IT and business or managerial area), communication or social skills, and the capacity for self-management. The team has four different roles: consultants, analysts, designers and implementers. The first is most typical of the BP team; the other three are fairly common roles in ICT projects. Consultants try to help an organisation reflect on its ICT use, and provide advice in a more general sense, before actually designing and building the ICT system. About half of the team members have a background in the (technology oriented) business project Information Architectures, while the other half was previously a member of the (management and business focused) business project Management Support.

Business projects make their own decisions regarding the role of team leader. The BP team chose to have one person fulfil this role. Initially, five different people shared the role of Business Project Manager, but this proved to place such a high demand on communication and coordination that the team decided to ask just one of the members to fulfil the role of business project manager. Since this is a 'non billable' function, the team regularly reviews the added value of the team leader. The team leader himself considers it important to instigate this discussion on a regular basis. The business project manager has two sets of tasks. The first is acquisition: chasing prospects, acquiring new projects. This takes up 60-70% of his time. The other 30-40% is used for team leader tasks, such as meetings, coaching people, conferring with other business project managers, recruitment of new team members etc. The team leader often combines his commercial and his team leader tasks by linking team members' wishes with regard to their work to his acquisition efforts, or preferably to new projects.

HRD function

Solvision has no specialised staff for business functions such as logistics, finance or HR. In accordance with the company's principle of no specialisations, there is also no HRD department, no HRD policy, and no training catalogue… HRD is fully integrated in the organisation. Responsibility for organising and taking courses lies with the business projects, and more specifically, with the consultants themselves. They fulfil an active role in looking for HRD activities that fit their personal development objectives.

However, there are two people within Solvision that informally fulfil the role of training co-ordinators, with regard to courses in generic competences, namely commercial, communication and coaching skills. They took the initiative to buy these courses (that are relevant for all consultants in Solvision, regardless of their expertise or business project) from an external training agency some years ago, and have remained the contact person ever since, out of personal motivation. They feel that it is very important for the company to build a shared knowledge and skill base with regard to these generic competences, as this facilitates communication and co-operation.

6.4.2 Learning within the team

How do the team members acquire and develop competences? This section discusses the most important ways of (formal and informal) learning within the team.

Informal workplace learning

An important form of learning is learning-by-doing, in projects. Team members find that they learn a lot from working on projects, though they are not always aware of this learning *during* the process. It is usually only *after* the project, that people realise how much (and what) they have learned. The phase between two projects is a very natural moment for reflection. People think about the direction in which they want to grow, and (more concrete) look for a new project to engage in. This reflection is to a large degree individual in nature, and often tacit, but also takes place in conversations with colleagues, the team leader or a personal coach. Though formal evaluations hardly seem to play a role, learning is evaluated informally in this respect.

Next to methodological, practical and basic professional competences, such as applying a new tool or working according to a new system, consultants also indicate to develop social skills and their insight in political issues on-the-job. As the following example from one of the team members illustrates:

> 'During my most recent project, I really experienced the influence that political games can have in an IC-T project (..). In this particular case, there was a lot of hidden resistance. People pretended to co-operate, but in reality they tried to sabotage the project at every opportunity. This really surprised me; I just didn't expect this kind of behaviour. I thought everyone agreed on the project, and expected people to be honest about it if they didn't. It was really difficult for me to find out that this wasn't the case, but now that I have left the project it is easier for me to understand what happened. First I thought it was me, but now I'm gone, I see people are still playing the same games; that helps to accept it.
> I have learned a lot from this experience, I became less naive. In my next projects, I will put more agreements on paper, not work only on a basis of trust. In the previous project I got into trouble a few times, because people agreed to do certain things, but denied this later on. The funny thing is that my colleagues warned me in the past not to trust people blindly, to also put things in writing. Their message never really reached me; I thought it was rather unnecessary. I guess I had to learn through experience.'
>
> (Excerpt from the case study interviews)

Consultants within BP tend to use their work environment *intentionally* as a learning environment. For instance, they deliberately choose a certain role within a project

team, to gain experience in that field, or they choose for a particular project because it gives them the chance to develop competences in a certain field. Interestingly enough, using the workplace as a 'learning place', does not always mean that consultants choose challenging new projects to foster their development. 'Slowing down' sometimes offers more opportunities for learning, as one of the team members explained:

> 'Sometimes I really need some peace, the work is so hectic and dynamic that I am sometimes happy to go to a client to do a predictable job. I find that I cannot be innovative all the time, there have to be calmer periods, in which my learning experiences can really sink in, and I find the time to apply what I have learned. It is like a sinus rhythm, in which active and calmer periods alternate each other. I find this essential, by reflecting and applying new insights I also learn. Actually it is part of the learning process, you do not process the new learning until then. I am not talking only about learning in the area of content matter expertise, but also about increasing my social skills and my self-insight.'
>
> (Excerpt from the case study interviews)

Next to using new projects as a way of learning, team members also tend to learn by seeking more information with regard to certain questions, or difficult problems, related to work. Often-used sources are Intranet, Internet and literature. But people also frequently consult their colleagues or their coach. Looking for new information can be a very focused activity (calling someone to ask for a specific tool), or it can be very unfocused (by posting a news flash on the Intranet, asking colleagues for advice; or by surfing the Internet). One of the team members explains:

> 'I tend to look up information on the Internet. Those are 'planned', deliberate learning moments. I find that if the question is very concrete, this can be very effective, but when my question is more vague, it doesn't always get me very far. That is the reason why I usually only use it in case of very focused questions. I do know colleagues who also use it for more undirected searches. Just browsing around, and stumbling upon new things. You learn a lot that way, but I do not have the time or patience for that type of learning.'
>
> (Excerpt from the case study interviews)

Learning by solving concrete 'new' problems appears to be very common. It is also a direct consequence of taking on new challenging projects or project team roles. By choosing such challenging work conditions, people increase the chance of encountering unfamiliar, new problems. In trying to find a solution, they expand their competences, by asking others for help, by experimenting individually, by looking for information in books or on the Internet….

Formal learning

Courses, workshops and seminars are attended frequently. Especially where people have learning needs with regard to ICT related or technical competences and communication skills people find this an effective way of learning. Sometimes

people choose to attend a specific course (e.g. about a specific IC-T tool) in order to prepare them for a new project or project team role. Selecting an appropriate course, applying for it, planning it, etc. is an individual responsibility.

The topics of courses vary widely, as do the length of the courses (from one day to several weeks) and their intensity (sometimes in one stretch, sometimes in separate meetings). People choose their own courses, but they do confer with their colleagues, their coach and their team leader, mostly in order to determine whether a specific course is worthwhile. Especially in case of expensive courses, people make sure to confer with the entire team, since the team as a whole invests in its own training budget. But personal motivation, and a specific idea on the direction of personal development are dominant factors in guiding the choice for any training activity.

Comparison

Team members value all types of learning, since each has a specific added value. Courses appear to be chosen mainly for issues related to the 'technical' side of the profession, and for explicit, clear cut learning needs, while people tend to use more informal learning opportunities for general personal growth and more 'implicit' learning needs, such as learning about politics and power in organisations, social skills, insight in human nature, practical issues in project management… In that sense, both types of learning are complementary to each other.

Individual responsibility for learning

Team members carry the responsibility for their own learning and development. Personal responsibility is a key word with regard to work in Solvision, and also with regard to learning and personal development. One of the team members explains:

> 'When you work within a more hierarchical organisation, there is always a manager who looks to see if you grow enough, if your career is going well, whether you attend courses, etcetera. But here, you have to do everything by yourself. If you don't take care of your career and growth, no one does. By the way, I think this works much better: it is not possible for others to determine your direction or your speed of growth.'
>
> (Excerpt from the case study interviews)

So, people are expected to manage their own careers. In turn, team members also expect to get enough space to work on their own development. For some of them, the opportunity for personal growth was one of the main reasons to join Solvision. They specifically looked for an employment setting that would support and foster their individual development.

In principle, there is much room for setting targets for personal development, and for working on them. In some of the team members, this does raise the question, however, if this is really the most efficient way of working: they doubt whether they

develop themselves in the 'right' direction (that is: a way that is good for the company). They sometimes appear to search for more direction. In practice, however, the opportunities for determining ones own direction are not unlimited. But rather than being set by management, they are dictated by the market. One of the team members:

> 'We do manage ourselves, and we are very free in determining our own direction when it comes to our careers, but we also allow ourselves to be directed by the type of projects that are available. For instance, last year I made the decision to orient myself on data warehousing. I even attended several courses in that area. But it appeared to be very difficult to find work in this particular topic, so at the moment I am doing other jobs. Jobs that are also challenging, but in different areas. Data warehousing remains 'on my list', as an area of special interest, but I honestly don't know if I will actually be able to work on projects in this area. Time will tell. I might even decide to try a different direction myself, if I enjoy my new project.'
>
> (Excerpt from the case study interviews)

In other words, there is a mechanism that ensures that people learn those things that are at the same time of interest to themselves, *and* useful for their work.

6.4.3 Learning infrastructure

This section characterizes the learning infrastructure of the BP team, by describing both material and social support for learning, as well as the most important conditions for learning.

Support for learning

'Learning from others' is in general a very important way of learning for the team members. People report to receive and seek support from co-workers (both within and outside of the business project), their coaches, top-level managers, the team leader, the training co-ordinators and sometimes even people from their private network. This situation seems to fit the nature of the organisation, which is basically a network. Communication and face-to-face contact are very important within Solvision in general, and also when it comes to learning. The type of support, provided by each of the different groups of people, differs.

Co-workers provide assistance mainly by:

- Acting as a trouble shooter: answering concrete questions, helping to solve specific problems;
- Evaluating / reflecting on (learning) experiences;
- Finding relevant courses;
- Providing feedback on behaviour, acting as a sparring partner;
- Finding new projects, which provide certain learning opportunities.

Team members are important in fostering informal learning in the workplace. Whenever people get the chance to work with others on a project, they feel they learn from those others. Either because they serve as examples, or as sounding boards. One of the team members explains:

> 'If you are able to do a project together, that is the best thing. You always learn from the other person, no matter the differences in personality or experience. Since we look for our own projects, we have the opportunity to create possibilities for working together, I think it is a really good way to connect people from Information Architectures and Management Support, and foster mutual learning. It is a very efficient way of learning, but also very effective, because it is very goal-oriented and practical.'
>
> (Excerpt from the case study interviews)

Unfortunately, it is not always possible to let people work together on assignments; individual work is also very common. The opportunities for group work on projects depend on external factors, such as the type of projects, the consultants available, etc. In many cases, clients have only a need for one consultant. The Web Makers stress the importance of considering and using clients as a source for learning, but team members indicate some hesitance in this respect. They find it difficult to combine the amount of trust and openness that is necessary to learn together, with the formal client-consultant relationship.

In the cases where team members have the opportunity to work together on projects, mutual trust and openness in the relationship are very important to actually learn from each other.

Next to the people from their own team (business project), co-workers from other teams within Solvision are also important in learning. The company seems aware of this, since it organises meetings and get-togethers on a regular basis to stimulate contact. Everyone attends the same introduction programme (sometimes the groups from this training stay in touch afterwards), Vision Web meetings are organised on a regular basis (sometimes with a social character, in other cases meetings of a professional nature), and virtual communities are implemented (for example teams of people who work for the same client).

Business Performance's *team leader* also helps individual consultants in learning issues. He uses the meetings between projects as a primary opportunity for reflection. By evaluating the project (What went well? What did you learn?) and by looking forward (What sort of project would you like to take up now? In what direction do you want to develop yourself? What learning needs do you have?). He helps to find new suitable projects for team members, in which he tries to accommodate for their learning objectives as much as possible.

The team leader tries to help team members to specify their learning needs, and link this to concrete projects. He does not only look out for individual development, but also takes into account the team needs. Team members appear also to use the team leader as an example, for skills in the area of leadership or project acquisition.

Every consultant at Solvision is allowed to find his or her own *coach*, preferably within the organisation, but external coaches can also be found. There are no rules or formal mechanisms in this area, neither is there any co-ordination with regard to the coaching. Finding and using a coach is mainly an individual responsibility. In general, coaches seem to fulfil mainly a role with regard to team members' personal development and growth.

The *Web Makers* (top level managers) recently also took up a more active role in coaching business projects and individual consultants. They noticed that the need for support has grown lately, as one of the Web Makers explains:

> 'The most important reason why we start to coach more, is that we find that for the people that now join the organisation, entrepreneurship is less obvious than it was for the people we started out with. Strictly speaking, the people from the start were the real entrepreneurs 'pur sang'. Currently, the organisation also has a large group of, what I would call, 'intrapreneurs'. Not only because of their character, but also because the organisation is bigger now. People want to act as entrepreneurs, but they need some help in finding out what that means exactly. In the beginning, when we were still very small, this was more clear.'
>
> (Excerpt from the case study interviews)

Topics for supporting by Web Makers include taking decisions based on each of the three roles of every Solvision-member: entrepreneur, professional and stakeholder, and the way in which teams organise the leadership function. Web makers have meetings with individual team members and team leaders, but they also participate in team meetings.

A final category of persons that provide support in learning consists of the *(informal) training co-ordinators*. They provide very specific support with regard to a certain category of training (commercial, communication courses). For these courses, they maintain contacts with external training institutions, support the intake and evaluation, refer people to co-workers who already participated in a specific course, in order to ask for references, provide information and so on.

The main principle regulating social support for learning is the so-called *pull-mechanism*. This means that support is provided on demand. The learner takes initiative for acquiring support. This is indicative of the large amount of self-management that is expected of members of Solvision, also with regard to their own personal development. In principle, people set out their own direction for development, and organise the support that they need. As one of the team members explains:

> 'I have to be the one to indicate that I need help from somebody. That is the only way in which the system can work. Imagine if it would be the other way around: then we would have a huge number of 'market stalls',

> with different people offering all kinds of help. It would be difficult to find the one I need in that chaos.'
>
> (Excerpt from the case study interviews)

For the exchange of support to actually work on the basis of this pull-mechanism, requires that people maintain their own network, and keep themselves informed on what other people are doing, and what their expertise is, and also ensure that people know where to contact the other. With the growth of Solvision, this is becoming more difficult. In the early days 'everybody knew everybody', and asking for assistance was easy. Nowadays, the organisation is so large, that internal networking is a skill in itself. People have to make an effort to get to know other people in the organisation, and to make themselves known as well.

The 'pull mechanism' being dominant does not mean that support is never offered without it being requested. In other words, the push mechanism sometimes also plays a role. Team members, team leader and Web makers all stress the importance of also actively offering support to co-workers. As the team leader explains:

> 'If you think that one of your co-workers could use help, but he doesn't bring this up, you should open the conversation yourself. That is also part of self-management: not just waiting until people come up to you, but also offering support if you feel this could be welcome. Everyone needs this from time to time. For me, supporting each other actively is one of the things that makes up the difference between a 'group of people' and 'a team'.'
>
> (Excerpt from the case study interviews)

And one of the Web Makers says:

> 'Not everyone always recognises it if he or she is stuck. In that case you need external stimuli. Moreover, learning is sometimes painful. In a way it is just like jogging. Whenever I am running, my legs hurt. Afterwards, my muscles are sore. But I still know that it is worth it, because my condition improves. This metaphor can be applied to learning. Sometimes you have to persist, even if it is painful. Other people can help prevent you from giving up to soon; they can push you to continue, even though it is difficult.'
>
> (Source: excerpt from the case study interviews)

So, the 'push-mechanism' also has its merits. However, team members find that it is not always easy to offer help. Sometimes people are embarrassed, or shy. Or they find it hard to determine the right time, or the right words for addressing an issue. Also, people usually do not see each other working, because people work for different clients. Therefore, it is important to keep in touch in other ways (email, telephone, meetings…) especially for coaches.

Material support

Next to the social support, *material support* plays a limited role. Consultants have a budget for personal development, to buy books or attend courses. There are three

major sources for training opportunities. First, people from Solvision organise product presentations on a regular basis. Moreover, Solvision Academy organises seminars or meetings to foster professional development. Secondly, Solvision maintains close contacts with an external supplier of training, who offers tailor made programmes in communication, coaching and commercial skills. Thirdly, people regularly engage in courses in the field of IC-T with suppliers of IC-T products and tools, or with training agencies.

Quality of support

The combination of a large degree of self-management, and social support 'on call', is experienced as very positive. But there are also some challenges. For instance: how to prevent those workers who are less skilled in asking for help from feeling 'lost'. Especially in those instances, the push mechanism is essential.

Conditions for learning

Next to specific support for learning, general conditions also shape the learning environment within Business Performance. Top managers seem to have a positive influence on learning, since they stress the importance and room for self-management and learning very consistently. This increases team members' motivation with regard to learning, and helps and stimulates them to take responsibility for their own development. The team size (15 people) also appears to influence learning in a positive way. There is enough 'body', to allow for flexibility and room for learning, but at the same time the team is small enough to 'fit into one room', for team meetings. More important however, appears the team composition. The team members a have different backgrounds (the business project resulted from a merger of different business projects), and this is in principle a source for learning from each other. But this is by no means self-evident: the different backgrounds can also hinder learning from each other, when people do not 'understand' each other because they approach a problem from different angles, due to their professional background.

The way in which the team leadership function is organised appears to influence learning in a positive way. It provides people with the opportunity to set out their own course, and to participate in the setting of the team direction at the same time. People also receive support in realising their plans.

Several, more general factors also seem to increase the learning potential of the work place. First, the organisational culture. This is a positive force, in the sense that learning is very much part of the mindset of people. Consultants are also ready to help each other in their development. A more negative aspect of the organisational culture is the openness. Since people do not work very closely on a day-to-day basis, it is sometimes difficult to build relationships of mutual trust and openness, in which people provide honest and constructive feedback (source for learning). Furthermore, the large degree of self-management that is characteristic of Solvision appears to stimulate personal development in general. The nature of work also stimulates learning, since learning and work are closely intertwined; learning is part

of everyday work. Since not much is routine. And finally, individual factors appear to play a role, such as motivation for learning and the ability for self-management and maintaining networks.

Most of the factors mentioned in the above are positive forces for learning. But there are also some issues that threaten opportunities for learning. For one, people find that maintaining a personal network, which is crucial to be ensured of enough support for learning, takes time and calls for specific skills. Second, a danger inherent to the high degree of freedom is that people get 'stuck'. This can happen both to experienced and very young people. Therefore it is very important that co-workers take note of such situations and actively offer support. But this is not always easy (because people often work individually for instance). A third issue is that of efficiency. With the growth of the organisation, the question arises whether more co-ordination is required. And, finally, some people in the organisation wonder whether their direction of development is the most desirable. One can learn much as a person, without the organisation benefiting directly (or without those benefits being clear to the learner). People generally agree that working for Solvision provides a positive stimulus to learning, but at the same time they point out that the focus is more on 'starting' the learning process, creating a motivation and drive for learning. Less attention is being paid to the direction of learning processes. This may feel somewhat uncomfortable at times. One of the team members explains:

> 'I do learn a lot, while working here, but sometimes I wonder if this is any good to the organisation.'
>
> (Excerpt from the case study interviews)

This raises the interesting question whether, in Solvision, there is indeed a big difference between what 'people' want, and what 'the organisation' wants. The company as such does not have strategic goals; rather, these are made up by the business projects. An important organisational principle is that people work on those things that they find worthwhile themselves. This means that the issue of effectiveness is different from that in more traditional organisations, in which the difference between individual targets (personal development) and organisational objectives is generally greater. One can wonder whether an organisation such as Solvision even has a 'wrong' direction of personal development. Of course it happens that people develop themselves in ways that do not fit well with the people that they work with. In those cases, they part ways: individuals move to another business project (or even to a job outside Solvision), or a new business project is started. Of course it also happens that people (or even entire business projects) develop themselves in a way that does not fit well with the market demands. In those cases, a self-correcting mechanism can be observed: this person will either change business projects, or change the chosen direction of development. Or, more drastically, the entire business project is disbanded, or sets a different strategic direction. As said before, people are not for a 100% free to set their own targets. But rather than management being the one to set boundaries, or set directions, it is the market mechanism that influences people's direction. In this sense, the feeling of

'discomfort' that some consultants sometimes experience may actually be very helpful, in that it sparks a reflection on the most suitable direction for development.

6.5 Analysis and conclusions

This section provides a *comparison and summary* of the learning processes and learning infrastructures in each of the case studies, in section 6.5.1 through 6.5.3. Finally, conclusions are drawn in section 6.5.4: to what extent is the picture of the learning infrastructure supported, refined and clarified?

6.5.1 Types of learning processes within the teams

Before considering the infrastructure for learning within the teams, it is relevant to explore the way in which this learning occurs. This section starts out, however, with a brief exploration of the type of competences necessary for operating in these teams.

Competences

The literature review revealed three types of competences that are considered essential for operating in self-managing work teams:

- Operational competences (necessary to fulfil day-to-day work within the team, for example operating machinery, but also planning, maintenance and other coordination and management tasks);
- Social competences (necessary to function effectively within the team, to cooperate with others, for example active listening, conflict resolution, participating in group meetings, providing others with feedback);
- Improvement/learning competences (necessary to participate in improving team performance, for example analytical skills, a broad view of the organisation and the role of the team within this context, knowledge of performance targets, problem solving skills, quality improvement).

The operational and social competences were evident in all three case teams. Competences in the field of improvement and learning were not mentioned explicitly. It has to be said however, that these skills were sometimes regarded as 'operational skills'. Within the Heineken team, quality control, changing machine settings and maintenance are all integrated within the operational tasks, and the ensuing competences considered operational competences. Within the Xerox team, analysing failures is integral part of an engineer's job. So is expanding knowledge on certain machines, creating protocols for solving common failures and sharing this knowledge with other engineers. For the Solvision team a similar situation goes. So it can be concluded that the abovementioned sets of competences can also be considered relevant for the members of the case study teams. Moreover, in each

case team individual responsibility / taking initiative was considered an important competence.

Learning within the team

But how do team members acquire and develop these competences? In other words, which types of learning activities are undertaken in each of the three case teams? Three types of learning activities were distinguished in this study: informal on the job learning, formal on-the-job learning and formal off-the job learning. As is shown in table 6.2 many, but not all types of learning were encountered in each case.

Table 6.2 Types of learning activities encountered in the three case study teams

	Heineken team	*Xerox team*	*Solvision team*
Informal workplace learning: unintentional	• Many opportunities for unintentional learning	• Many opportunities for unintentional learning	• Many opportunities for unintentional learning
Informal workplace learning: intentional	• Opportunities for formal learning are used deliberately by team members and team leader	• Opportunities for formal learning are used deliberately by team members and team leader	• Opportunities for formal learning are used deliberately by team members and team leader
Formal, on-the-job learning	• Important way of learning to operate a certain workstation	• Not used very much.	• Rare, apparently not used.
Formal, off-the-job learning	• Important way of learning. • Also for long term needs	• Important way of learning, especially for technical issues.	• Important way of learning, especially for keeping up with new professional developments and communication skills.

Informal workplace learning

Informal, *coincidental* (non- intentional) learning plays an important role in each of the teams. Just as the literature predicts, task variety and richness (autonomy) serve to create natural learning opportunities during work. For the Heineken team, the work is rich in learning opportunities, because of a large degree of variation in types of client orders, the job rotation and the fact that workers are involved actively in solving disturbances, and in repairs and revisions of the machinery. Within the Xerox team, as a general rule about 20% of all the disturbances that engineers meet,

are new to them. The autonomy of engineers also serves to increase learning opportunities. A similar situation is encountered in the Solvision team, where consultants also work very independently, and variety in projects is typically large. Learning opportunities are considered greatest whenever people get the chance to work on projects with colleagues.

The workplace is also used *deliberately* as a place for learning. In each of the teams examples of intentional informal workplace learning were encountered. In the Solvision team, for example, consultants were found to deliberately choose new projects or tasks that provide them with a chance to develop certain new competences. Interestingly enough, people do not always choose for projects that are rich in learning opportunities. Sometimes consultants indicate that they seek a less challenging project, in order for other learning experiences to 'sink in', to be able to practice with new behaviour and to create time for reflection. Choosing new projects or tasks as a means to develop and practice new competences, is also common in the Xerox and the Heineken teams.

Formal learning on-the-job

On-the-job training is an important way of learning within the Heineken team. In the other two cases, however, it was found to play hardly any role. This is probably due to the different nature of these companies. Whereas Heineken is a manufacturing company (that often have a tradition in on-the-job training), the others are professional service-oriented firms, in which jobs are less suitable for this type of training (e.g. because the engineers and consultants work with clients).

Formal learning off-the-job

Off-the-job training, was found to be important for members of all three teams. Solvision is the only company without an internal offer of training programmes, and without any rules with regard to taking certain training. Some coordination is provided with regard to generic topics, such as communication and commercial skills, but choosing and following training programmes is predominantly an individual matter.
In Xerox, off-the-job training is an important way to prepare engineers for servicing a new product, but also to keep product knowledge up to date. Heineken, like Xerox, has a certain offer of courses, some of which are obligatory (for instance because of safety regulations, or in order for operators to operate on a certain job level). Within Heineken, training is most deliberately also used to support more general, long-term development, some workers also partake in educational programmes leading to official, nationally acknowledged diploma's. It would appear that training is the least important for consultants in the Solvision team. This may be a consequence of certain features of the work process: workers in Heineken and Xerox have to learn how to operate certain machines and / or to follow certain procedures; training is a very efficient and appropriate way to fulfil such learning needs. Another possible (part of the) explanation is the educational level of these

team members. Earlier (chapter 4) it was already stated that workers with a higher educational level appear to engage more frequently in, and benefit more from informal learning opportunities.

Comparison of types of learning

When comparing the different types of learning, there is not one type that is considered 'best'. It appears that the *preferred* type of learning activity depends on the person and his or her specific learning needs. Generally, the workplace is valued highly as a source for learning in all cases, but off-the-job learning is considered also necessary and complementary to on-the-job learning.

An interesting question is whether *different types of competences* are acquired through each of the different types of learning processes. The case studies do not provide any 'hard' evidence, of course, but it can be noted that training is often used in order to acquire explicit, relatively well-defined operational or professional competences. More informal types of (intentional) learning on-the-job appear to be especially useful for the development of more soft, less tangible competences, such as: acquiring and developing social competences and certain attitudes (e.g. taking responsibility or working pro-actively), 'growing into' a certain role, developing issues such as sensitivity for political issues or increasing one's knowledge of the organisation.

Regulatory activities

With regard to identifying learning needs, it appeared that the majority of learning needs that are expressed by team members are technical or content-related. Especially in the Xerox and Heineken teams. Competences with regard to cooperation and social skills were mentioned less frequently (which is not to say that people do not have any learning needs in these areas, but they are more aware of, and perhaps more focused on the job-related, operational competences).
Evaluation of learning and development in a general sense usually happened once or twice a year (in development meetings). Evaluation of *separate* formal learning activities appears to receive less attention. Within Heineken and Xerox, the companies that have an internal offer of courses, tests are frequently used to evaluate attainment of learning objectives on a course level. Evaluation on workplace level seems very rare. Attention for evaluation of formal learning activities is even less within the Solvision team.
With regard to *management of learning processes* it appears that in each of the cases team members are considered responsible for managing their own learning processes. But the sense of responsibility needs to be stimulated more actively within the Heineken and Xerox teams, than within the Solvision team. As a result of the bureaucratic background of these companies workers are more used to the company taking responsibility and or they do not feel a sense of urgency with regard to learning (because of good company results in the past). Within Solvision, consultants feel the responsibility for their own learning process more strongly. They are very

independent, in the sense that they organise their own learning opportunities, such as following courses, though sometimes with help from others (team leader, other team members). It can even be said that for part of the workforce, the room for self-development, and the individual responsibility for personal growth was a primary reason to join Solvision in the first place.
In sum, regarding the nature of learning within the case study teams, two important observations can be made. First, workplace learning is a very important learning strategy, and second: individual team members are considered to carry a large responsibility for learning. With these observations in mind, we now turn to consider the learning infrastructure of the case teams.

6.5.2 Support for learning activities

The first element of the learning infrastructure consists of *support* for learning and regulatory activities: interventions, activities, measures or tools meant to provide support for learning within a self-managing work team. Based on the literature and group interviews, a distinction was made between social support and material support.

Social support

Social support consists of the support in learning, provided by people such as team members and the team leader. Table 6.3, on the next page, provides an overview of the type of people that are important in each of the cases, and the type of support for learning they provide.

People providing support for learning

First off, it can be concluded that social support for learning is an important factor in each of the teams. Especially team members and the team leader play a very supportive role. But top-level managers appear significant as well, in a more distant way. HR professionals and HRD professionals also play a role in Xerox and Heineken (Solvision has no formal specialists in this area).

In general, the type of support provided by the different people varies. *Co-workers* from the same team are primarily important in supporting learning in the workplace 'hands-on' (especially with regard to informal learning, but we also find team members in more formal roles, such as workplace instructor).

Table 6.3 Social support for learning in the three case study teams

	Heineken team	*Xerox team*	*Solvision team*
Other team members	• Very important, especially in learning on-the-job	• Very important, especially in learning on-the-job	• Very important, especially in learning on-the-job
Team leader	• Very important, especially in regulatory activities	• Very important, especially in regulatory activities	• Very important, especially in regulatory activities
Higher level / top managers	• Role in the background, through team leaders	• Provides active support in general sense	• Provides active support, by coaching teams
HR(D) professionals	• Important role, in supporting formal and informal learning (both responding to questions, and pro-actively) Provides advice and material support. Close contact with team leader	• Important role with regard to formal learning. Provides advice and material support	• No HRD professionals. Just two coordinators who support formal learning with regard to communication skills
Others	• Support staff (quality management, maintenance) support team members in learning (is not sure how this happens in practice)	• Technical specialists help with formal and informal learning with regard to product-related knowledge	• Colleagues from outside team, or from other (client) organisations help in reflection and learning • Coach helps in reflection and learning
Mechanisms for social support	• Pull and push mechanism, supported by high visibility for each other	• Pull mechanism supported by regulations for asking for help, and push mechanism	• Pull mechanism

The *team leader* was also considered important in supporting learning in the workplace through coaching ('hands-on'). They were also found to enhance *conditions* for informal learning (e.g. Heineken's team leader added extra people to

the team to create time for learning; Solvision's team leader tries to match people with projects in such a way that they have learning opportunities and Xerox's team leader took care to stimulate team members to help each other in learning). However, these tasks were rather implicit, and seemed a natural part of everyday team management. Next to supporting learning, team leaders were also found to play a role in regulatory tasks: identifying learning needs and choosing learning activities. Learning outcomes were assessed mainly in the sense of monitoring the overall progress (e.g. once a year). Team leaders all were concerned with creating and developing a sense of awareness of the importance of learning, and increasing motivation for learning (in Heineken and Xerox more strongly than in Solvision), thus supporting team members to actively manage their own learning process. In each of the three teams, Personal Development Plans and the accompanying PDP meetings fulfil a key role in this respect. In the Solvision team, the team leader engages in reflection with consultants after each project, to determine what was learned, and what new challenges the consultant would like to meet in his next projects. Within the Xerox en Heineken teams, team leaders meet annually for development meetings, in which team leader and the learner look back and look forward to the coming year. Usually, team leaders feel a need for extra (informal) meetings during the year. They feel that talking about learning needs but one time a year is not enough to monitor an employee's progress adequately. Interesting to note is that within Xerox, it was found that engineers regularly ask for opportunities to work with senior colleagues, in order to learn from their example. The team leader is somewhat hesitant in allowing for such activities; since they feel people often learn more by 'doing'. This is in itself an example of how management is deliberately considering the merits and negative aspects of the workplace as a learning place. Choosing new tasks or projects with the intent to learn from them is typically an activity of management and employees, not of HRD professionals.

Top-level managers play a role in the background. They mainly support learning by creating favourable conditions for learning, and by stimulating motivation for learning and fostering a sense of responsibility for learning (in the case of Xerox and - to a lesser degree - Heineken). Sometimes they also engage in very direct coaching activities (particularly in Solvision, which is the most flat organisation). *Professionals in the field of HR and HRD* (only within Xerox en Heineken) support learning in the sense that they organise an offer of courses, and develop instruments for regulatory tasks, such as identifying learning needs. In doing so, they operate both reactively and pro-actively. An example of reactive support is buying or organising certain courses as requested by the team (member). An example of pro-active support is the development of a tool for PDP's and PDP meetings. (Material support is discussed in the next section).

A difference between the *Solvision* team on one hand, and the Heineken and Xerox teams on the other, is that within the first organisation, the network of social support seems more important and broader. Within the Solvision team, it is not uncommon for consultants to ask for help from colleagues from other teams, from

other companies, or even clients. Moreover, team members in Solvision in principle all have a personal coach.
Another noteworthy observation from the Xerox and Heineken teams is that the technical specialists (sometimes in the support staff) are expected to support team members in learning (in stead of solving problems for the team members, they are expected to involve team members).

Mechanisms for social support

The importance of social support for learning, especially that of other team members, does not mean that this support is always self-evident. Noteworthy is the mechanism that appears most important for providing support. The Solvision team uses the term *pull mechanism* to indicate that the initiative for asking for support should come from the learner. In other words: support should be asked for, not offered. As a consequence, internal networking and asking for support are important skills. Next to the pull mechanism, the *push mechanism* is sometimes also important. In other words: team members should also actively offer support. This too, is not always an easy process. Consultants work in different combinations, and are not always very familiar with each other. Whenever people do not know each other very well, it becomes more difficult to provide good feedback. Openness and mutual trust in a relationship appear important conditions for giving advice and feedback.
Similar problems are encountered in the Xerox team, where asking for help is also not always easy. Engineers are sometimes hesitant to admit to needing help, and also tend to find it more gratifying to solve problems by themselves. Especially the more experienced engineers also are used to being able to work independently, previously it was more common for engineers to be able to answer all questions themselves. But new technological developments make it impossible for individual engineers to know 'everything' from 'all' products. Consequentially, they need to ask their co-workers for help more often than they used to. In order to support engineers in asking for help, *agreements* were made within the team: if an engineer is not able to solve a certain product failure within 45 minutes, he has to call a specialised colleague for help. If the advice provided over the phone is not enough to solve the problem, this specialist comes over to assist 'on the spot'. In very serious cases, he takes over from the engineer, who attends to other calls. Later on, the specialist then informs the engineer on the nature of the problem and the eventual solution. Next to this type of technical and practical feedback, which is important for workplace learning, the team leader tries to *actively* signal need for more general help, for instance by analysing people's performance indicators. For instance, when an engineer structurally takes to long to handle his calls, the team leader tries to analyse with this engineer what causes the problem: is there an underlying learning need? (This could be called a push mechanism).
The Heineken team is the only team were members *share the same work space*. Supporting colleagues is most self-evident here. In the case of a disturbance in one of the workstations, this is *visible* for everyone: a red light signals problems. If this

light is on for a long time, workers tend to go over to this particular workstation to see if they can be of assistance in solving the problem. Since all workstations are part of one single production line, all stations will eventually be affected by a disturbance in one location. So, next to the fact that it is visible for everyone that a certain team member is having difficulties, there is also a *shared interest* in solving the problem as soon as possible. Therefore, helping each other out in the case of a problem is most natural in this team.

Material support

In addition to the support learners receive from their colleagues, managers and other people in the organisation (the social support), instruments and formal learning arrangements are also used to facilitate learning. These are labelled as 'material support'. All in all, material support was found to be most elaborate in those companies with their own HRD department: Xerox and Heineken. Table 6.4, on the next page, provides an overview of the material support encountered in the three case teams.

Training programmes and courses constitute an essential element within the category of material support. Heineken offers an elaborate array of internal training programmes. Most notably the Operator 2000 project, an on-the-job training project. By means of the Operator 2000 project, Heineken's HRD department is currently trying to make part of the informal learning more visible and more explicit, and to structure this type of learning more, in order to safeguard the quality of what is being learned. This can be considered both as a recognition of the fact that much is learned informally at the work place, and as an indication of the HRD department feeling that the quality of informal learning cannot be guaranteed. In order to increase quality, Heineken is building an elaborate system of on-the-job training, using operators to write learning materials in order to ensure ownership. All learning materials are made available by means of the computer, they are accessible from a number of workplaces, but also from the Open Learning Centre. Next to Operator 2000, a wide variety of other training programmes are available (both on and off the job, both internally developed and externally organised).

Xerox offers a number of specialised product training programmes for engineers, intended to help them get acquainted with a specific machine, when they start servicing it. Moreover, the company offers a variety of other training activities (some are standard, others tailor made, some internally developed and others externally organised).

The situation within Solvision is somewhat different. This company has a limited internal offer of formal learning activities. In principle every consultant chooses his or her own external courses, individually, but they do collectively organise some generic courses (communication and commercial skills training, for example). This not only has financial and practical advantages, but because they all attend the same

training, many of Solvision's consultants now are familiar with the same communication model (the model that is used in the course), which facilitates communication and cooperation within the company.

Table 6.4 Material support for learning in the three case study teams

	Heineken team	*Xerox team*	*Solvision team*
Training, courses, workshops (formal learning opportunities)	• Wide array of off the job courses; • Operator 2000 on-the-job training	• Wide array of off-the-job courses, most notably: product training	• Limited internal offer of courses
Learning contracts / PDP's	• PDP's and competence profiles (elaborate system)	• PDP's and competence profiles	• PDP's in a less formalised and embedded form
Intranet		• Eureka!-database with solutions for common problems	• Used as a platform for asking advice from colleagues • Links to external training and information sources
Self instruction materials	• Open Learning Centre with learning materials Operator 2000 (tests, instruction materials)	• CBT's	
Job instructions / manuals	• Manuals	• Edoc	
Information system	• Accessible to team		
Books, library			• Personal budgets for buying resources • Library

A second important type of material support consist of the tools, *PDP's*, that are used for clarifying learning needs and reaching agreements on learning activities and learning objectives and for assessment of learning outcomes. They help to identify learning needs and manage the learning process. In Xerox and Heineken the HRD department has developed a system for making development plans (including formats for personal development plans, instruments for assisting managers in personal development meetings). In Solvision, this happens more informally and ad hoc.

Thirdly, *background documentation* is used in order to support learning in the workplace. Engineers from the *Xerox* team use Edoc, an on-the-job information system on their laptop, operators within the Heineken team use job and machine instructions and books to look up information in the workplace, consultants from the Solvision team use the Intranet and Internet. Sometimes the background documentation takes the form of self-instruction materials. The Operator 2000 materials and tests are available for self-study for the members of the Heineken team. For the engineers from the Xerox team, a set of CBT's was developed, which they can use to keep their ICT knowledge and skills up to date.

The *information systems* within Xerox and Heineken are accessible for all, but not really fit to provide feedback in such a way that this can support learning from experience.

A final point, worth mentioning here, is the fact that within Solvision all consultants have a *personal budget* to buy material support of their choice (e.g. books or courses).

Organisation of support for learning

In the group interviews, the issue of organising support for learning was addressed specifically. The picture that emerged was that different people are involved in supporting learning: team leaders, team members and HRD professionals all fulfil an active role. It appears that in each of the three cases, the team leader and team members are indeed very active partners in the learning function. HRD staff in Xerox and Heineken fulfil a supportive and facilitating role (both reactively and proactively). This picture is consistent with conclusions from the group interviews and the literature review regarding people involved in providing support for learning.

Within Solvision, there is no specialised HRD staff. Team leader and team members fulfil all important tasks with regard to learning themselves: analysing learning needs, choosing learning activities, finding relevant training programmes and /or realising more informal opportunities for learning (such as finding projects with learning opportunities). Some consultants act as coaches to one or more of their colleagues. Two consultants informally fulfil the role of training coordinator; they provide support in buying training in the field of commercial and communication skills.

In the case of Xerox and Heineken, team leaders and team members also fulfil an active role in supporting learning, but there is also a specialised HRD department involved in providing support. Both HRD departments fulfil an important role in providing material support for learning: organising training programmes, providing assistance in finding adequate external courses, developing instruments for analysing learning needs and making learning plans… Important to underline is their supportive, facilitative attitude towards the teams. Team leader and team members are considered primarily responsible for learning; the HRD consultants regard

themselves as supporting. Team leaders are used as the primary contact person for the HRD departments. Teams within Heineken also have specialised training coordinators, team members who have an important role in organising and monitoring training activities within the team.

Quality of support

After considering the type of support team members appear to receive, an essential question is whether this support is effective. This was not studied elaborately, but team members were asked whether they considered the support to be sufficient.

In general, the quality of social support is perceived as sufficient, and is highly appreciated. Strengths of this type of support are: it is provided just in time (on demand), and it is very focused and specific (Usually support is called for whenever people are met with a particular problem). However, it is not always easy to realise this type of support. This presents a major point of concern. This concern was expressed most strongly within Solvision, the company in which individual autonomy is most strongly. Here, social support for learning depends most strongly on the 'pull mechanism', whereas in the other cases the pull mechanism is supplemented with agreements for asking and providing support (Xerox) or by the fact that people work in each other's proximity (Heineken) (see earlier). Consultants within Solvision experience several challenges in asking for support, most notably:

- Maintaining a personal network (on which they can fall back on) takes time and requires specific competences;
- Paradoxically, because of the high degree of autonomy, people sometimes tend to 'get stuck'. The amount of opportunities is so large, that people sometimes do not know which way to go: they get lost. Once in a situation with a lack of focus, it proves more difficult to ask for help (because people do not have a concrete question), thus people end up in a reinforcing cycle. In such cases it is important that outside help is actively provided.

Likewise, the material support is also generally appreciated. There were no real concerns or complaints with regard to this type of support for learning. Especially the tools for analysing learning needs and making PDP's, and the concrete training programmes appear to be very helpful.

6.5.3 Conditions for learning

Next to support for learning, general conditions also influence the actual learning processes within the team. Thus, they are also part of the learning infrastructure. They were defined as: characteristics of the team and the organisation that enable or hinder learning from team members.

Based on the literature study and the group interviews, conditions at several levels were distinguished:
1. Organisational level
2. Team level
3. Workplace / job level
4. Individual level

Table 6.5 provides an overview of the most important case results in this respect.

Table 6.5 Conditions for learning in the case study teams

	Heineken	*Xerox*	*Solvision*
Organisational level			
Top managers vision and behaviour	*No clear effect was noted*	+ Top managers support learning, try to stimulate learning by creating a 'sense of urgency', communication is important tool.	+ Top managers are example, and provide inspiration and motivation through communication and coaching.
Culture	+ Task oriented culture - Action oriented culture - Learning is not yet 'automatic'	+ Task oriented culture - Learning is not yet 'automatic'	+ Working and learning in cooperation is appreciated (easy to approach people) + Learning is part of people's 'mindset'
Team level			
Leadership	+ Provides room for learning, and support when necessary (coaching).	+ Provides room for learning and support when necessary (coaching)	+ Provides room for learning and support when necessary (coaching)
Team mix	+ Team members get along very well, constructive climate	*No specific positive or negative effects were noted*	- Team has 2 'blood types' → not always conducive to learning - Team is young, needs more senior members
Reward system	*No specific positive or negative effects were noted*	*No specific positive or negative effects were noted*	*No specific positive or negative effects were noted*
Team size	+ Sufficient 'body' (extra formation!), yet not too large	*No specific positive or negative effects were noted*	+ Sufficient 'body', and allows for enough variety
Workplace / job level			
Nature of work	+ Variety in work + Task richness	+ 'Problem rich'	+ New challenges follow each other rapidly
Autonomy	*No specific issues noted*	+ Independent, but bound by team borders	+ /- Very independent

(table continues on next page)

Table 6.5 – continued -

	Heineken	*Xerox*	*Solvision*
Cooperation with other team members	+ People are visible for each other, work together	- Individual	- Individual
Work pressure	+/- At times too high	- Generally high	- Generally very high
Individual level			
Motivation for learning	+/- Some people are highly motivated, others less (or external motivation)	+ Individual motivation for learning and inherent interest in the job ('professional curiosity')	+ Motivation for learning and professional development is very high
Skills	*No specific skill issues noted*	*No specific skill issues noted*	+/- People need: capacity to maintain balance between learning and working, capacity to build network and ask for help, capacity for self-management

Organisational characteristics

It was found that in each of the cases*, top management* regarded self-management and learning important elements in the organisational philosophy. Top-level managers were also found to generally actively communicate this vision in the organisation in different ways, both in 'words' and 'behaviour'. In Solvision, for instance, top-level managers act as coaches for team leaders, and even for team members. This is possible because it is still a relatively small, and very flat organisation. In Xerox, top-level managers try to create a sense of urgency for learning by communicating the importance of learning. Moreover, they seek to support learning by offering various instruments (e.g. team development questionnaire). All organisations indicate that it is very important that top-level managers 'walk their talk'.

Another factor that appeared, rather unexpectedly, as a very influential condition for learning, is the *organisational culture*. This was found to play a role in all teams. Within Solvision, the company culture was clearly considered to stimulate learning. Learning and personal development are very prominent in the thoughts, discussions and expectations of employees. It is important for all consultants, and frequently a topic for discussion. People also describe their culture as very informal, people are very accessible, and they tend to make time for colleagues with a question. As a negative aspect of the culture, they mentioned that the contact is frequent, but sometimes somewhat shallow. Providing critical feedback proves to be more difficult. In Xerox, the more bureaucratic, hierarchic culture from the past still influences the organisation today. This is changing, but team leaders and managers report that some people still expect the company to 'take care' of them (not seeing learning as their own personal responsibility). And the task culture (which appears to be dominant today) is sometimes still overshadowed by a more power-oriented

culture (hierarchy based). Another aspect of the Xerox company culture is that engineers do not find it easy to ask for assistance. They are used to have answers to questions themselves (this was possible when technology was less complex and less interrelated with client technology). In Heineken, the company culture sometimes also hinders learning. For instance, the culture is described as highly action oriented: resulting in a high level of activity. People do a lot in short time but there is less time for reflection. Moreover, the company is not always very result oriented. The company did very well during an extended period of time. As a result, people are used to things going well, and it is sometimes difficult to create an awareness that learning is necessary. A positive culture element is the 'task oriented culture' that starts to develop (as opposed to a more hierarchical culture).

Team characteristics

Team size appears to influence learning in each of the three case teams. Team size matters predominantly because it creates 'body', and therefore room for learning and reflection. People can take over some tasks, for instance. This point was mentioned primarily in Solvision and Heineken. In Heineken, extra formation was built in the team in order to create time for learning (Operator 2000). At the same time however, team size should not be too large. Within Heineken the relatively small team size of 9 people is considered to positively influence involvement and responsibility in team members.

Team *composition* also influences learning processes. The Heineken team reports a very good cooperation. Team members ‘click’; communication goes smoothly, and people find it easy to work together in a constructive way. The Solvision team is a mix of two types of consultants (different backgrounds). The general idea is that this variation can be a source for learning. In reality, it appears that the difference also hinders learning and working together. This appears to support the proposition that a certain 'common ground' is essential for a real meaningful communication and cooperation in which people learn from each other (cf. Nonaka & Takeuchi, 1995). If people are really to learn from their differences, this requires special attention.

Both in Xerox and Heineken, changes in the *reward* system are at hand. There is a tendency towards performance/ result based pay, instead of a system based on hierarchy and years of experience. This appears to be a direct consequence of the transition from a more bureaucratic organisation towards one based on self-management. Within Solvision, a results based rewards system is already in place. Despite these differences, the reward system is mentioned in none of the cases as a very important influence with regard to learning and development. It is relevant to mention however, that in all cases, team members are expected to actively work on their own personal development. This is integrated in the criteria for performance evaluation.

The *team leader* is a very important factor in each of the teams, albeit in a different way for each team. His role is always a dual one. On the one hand he tries to offer room for learning (by setting borders, and allowing the team room to solve problems or develop plans themselves, thus opening op learning opportunities). On the other hand he offers team members concrete support in learning by reflecting with them on learning needs and suitable learning activities (both formal and informal learning activities). In Solvision, the operational aspects of the team leader role rests with one person, but the more strategic aspect is shared with all members. Together with the team leader they reflect determine the course the team wants to take, they set team objectives etc. In the case of Xerox and Heineken, team leaders have a somewhat more directive role. Also, the room for teams to set their own objectives is more limited; team objectives are based on company strategy. In Heineken, the team leader sometimes even takes charge, if this is necessary to solve a difficult problem. Leaving room for learning is more of a point of attention for this team leader than in the other two organisations, where team leaders operate more individually and more autonomously, and the coaching aspect receives more attention.

Workplace / job characteristics

In each of the teams, the nature of work appears to significantly influence the opportunities for learning. Especially the high level of *variation*, causing the team members to meet new problems on a regular basis. The source of variety is different in all three cases. For Heineken, variety is built in the job because the orders change frequently (for example different volumes, different cans), and because operators rotate over different work places. Within Xerox, engineers' work is highly varied because they work with different clients and for different products. For Solvision, variety is caused by the different projects that consultants take on. The high degree of autonomy also serves to increase learning opportunities. The degree of autonomy is different for the three cases, Heineken being the least autonomous, Solvision the most.

A factor constraining learning is *work pressure*. This sometimes hinders reflection and thus learning. Especially in the Xerox and Solvision teams, where team members work in direct contact with clients, time pressure is felt very strongly. For the Heineken team, work pressure is an explicit point of attention; extra formation is added to the team to allow team members to attend courses (for Operator 2000).

A final job/workplace related condition influencing learning is the *opportunity for cooperation*. Within Heineken, the team shares one workplace. Because of this physical proximity, it is easy for team members to help each other in learning, or to ask for help. Team members in the Xerox and Solvision teams work more on a individual basis. They indicate that they learn much from the contact with other team members, but have to make more efforts to organise this contact.

Individual characteristics

In each of the case teams, individual *motivation* appears to be a key issue in learning and personal development. Within Solvision, the drive for learning is already quite high, and appears to receive little specific attention. Especially in Xerox and Heineken, motivation is explicitly looked at. Managers and team leaders regard it as their responsibility to increase motivation, it acts as a drive for learning. In Xerox, for example, management tries to enhance motivation and interest in learning in several ways. For example by a newsletter signalling new technological developments and their impact for Xerox products ('Techknowlogy'), and by introducing the learning 'duty'. It has to be said however, that in the Xerox case study team, motivation for learning and personal development was already quite high. Interesting to add is the *approach* taken by Xerox managers and team leader. They strive to enhance motivation for learning by safeguarding the 'joy' in learning. The most important element is to make sure that people learn things they can actually use in their jobs. It is considered very rewarding to see learning efforts pay off. The team leader and his manager recognize that their people do not learn for the sake of it, they want to see their investments to lead to better performance. In order to maintain this link between learning and performance, team leaders do not only stimulate motivation by stimulating learning. On the contrary, sometimes they slow people down, in order to prevent disappointment or even burnout. They try to assist team members in achieving 'just-in-time learning'.

Motivation appears to be the least high in the Heineken team, it seems. Some people do not see the need for learning, they are used to a situation in which this is not necessary. Others are externally motivated and expect a reward for their extra (learning) efforts since the implementation of self-managing work teams, in the form of extra rewards. In general, however, motivation for learning is certainly not low in this team. Also, team members indicate that it is not a problem that not all team members are equally motivated for learning. In this regard, too, some variation within the team is useful.

As a final individual condition, within the Solvision team, it was mentioned that *certain competences* are very important to be successful in learning. For instance the capacity to maintain a balance between learning and working, the skill to find and ask for help, and the ability for self-study. This was not mentioned in other cases. However, it is to be expected that it is a general rule that learning in a self-managing work team demands specific skills.

6.5.4 Conclusions

The case studies were carried out with three objectives in mind.

a) Validation: to further support this inventory of learning processes and learning infrastructure elements, by gathering (additional) empirical data;

b) Evaluation: weighing the different elements in the learning infrastructure, to discover which ones are truly essential;
c) Clarification: to understand more about the *nature* of learning infrastructure of teams (e.g. types of learning infrastructures, relationships between elements of the learning infrastructure).

This section provides main conclusions with regard to these three issues.

Validation and evaluation: most important elements in the learning infrastructure

Considering the objective of *validation*, it can be concluded that the case studies served to support the main framework for the learning infrastructure, as it was constructed on the basis of the group interviews and literature review. For all of the main categories (learning activities, regulatory activities, material and social support, conditions) of the framework relevant data were collected in each of the three case teams. Results gave no reason to amend the framework in a fundamental way (e.g. by including new categories). Not all of the learning infrastructure elements that came forward from the literature review and the group interviews appeared in all case studies, however. In that respect, the cases also helped to uncover the more 'robust' elements in the learning infrastructure, thus *refining* the framework.

In general, it appears that with regard to learning activities, *informal workplace learning* is very important. Workers in self-managing work teams do find that their work offers many learning opportunities, largely because of variation in tasks, a certain degree of autonomy and 'task richness'. Though the nature of work in each of the case teams is very different, all jobs were characterised by these elements. So, though the amount of autonomy and task variation and richness for an operator in Heineken may be smaller than for a consultant within Solvision, both experience that their job offers room and opportunity for learning. Moreover, workers also appear to use the workplace *intentionally* as a place for learning, developing their own learning strategies. Especially for less 'concrete' learning objectives, such as 'developing more feeling for political games', or 'growing into the role of chairman', workers deliberately choose certain tasks and projects in which they hope to develop such competences through 'learning by doing'. Again, this strategy was found in all cases, though actual activities differ as a result of the nature of the job: an operator in Heineken may choose to take on a new team task, an engineer in Xerox may choose to service a new product, whereas a consultant in Solvision may take on a new project or client. Next to informal learning, *formal learning* is also an important strategy for developing competences. It is used for a different type of learning needs (more focused, more explicit).

Secondly, in the field of support for learning, *social support* appears paramount. Especially the team leader and team members are experienced as rich sources for learning. The team leader fulfils an important role with regard to regulatory activities (identifying learning needs, assessment of learning outcomes and managing the

learning process), especially during yearly PDP meetings and in supporting learning (by coaching). Both in the literature and in the group interviews, it was suggested that the team leader has a role in facilitating learning by influencing conditions for learning. Several examples of this role were found in the cases. However, it does appear to be somewhat implicit, and indeed integrated in everyday managerial tasks. Team leaders appear to be much more conscious of the other main supportive role of team leaders, namely supporting in regulatory activities, and supporting learning processes 'hands-on'.

Team members are looked upon for support in informal workplace learning. They are asked to help solve difficult problems and to give advice in all cases. The weight attached to social support is probably related to the importance of informal learning. Though materials (e.g. books, manuals) are also used to enhance learning in the workplace, other people are very helpful in providing tailor-made assistance and guidance or otherwise support learning.

Thirdly, general *conditions* for learning can also to a great deal determine the learning activities that take place within the team. It is hard to pinpoint one group of conditions that is most influential in general. Rather, it appears that all types of conditions listed in earlier overviews, may play a role in influencing learning in a negative way or positive way (and if they do, they can be considered part of the learning infrastructure). For instance, within Solvision, the team composition proved to inhibit learning: people's backgrounds differed so much that it became difficult to learn from each other. And the culture of the company – very learning-oriented – was experienced as a driving force for learning. But within Heineken and Xerox, cultural aspects of the company were much more a hindrance to learning: in those companies, management takes deliberate efforts to stimulate a sense of awareness and responsibility for learning. And on the other hand, 'hard' team aspects such as composition and size, were experienced as positive influences. So, the role of learning conditions is not universal, but rather situationally determined. And their influence is not unequivocal: a certain organisation or team characteristic that can be a positive influence on learning in one team may prove to hinder learning in the next.

Table 6.6 on the next page provides an overview those elements of the learning infrastructure that appear to be *most important* throughout the three cases.

Clarification: the nature of learning infrastructures

Organisation of learning infrastructures

All in all, it can be said that the case studies significantly *sharpened* the image of the learning infrastructure within self-managing work teams. They underlined the great extent to which the learning infrastructure is integrated within the organisational context. Conceptually, the learning infrastructure can be distinguished from other

organisational subsystems, but in real life, the two are blended together. Especially where social support and conditions for learning are concerned, for example: team members can be working together to solve a job problem *and* support each other's learning process at the same time. Generally, material support stands out more as a clearly identifiable element of the learning infrastructure – especially where training programmes or courses are concerned.

The high level of integration of the learning infrastructure within the organisational context also means that it should not so much be compared to an isolated business function that can be purposefully designed and managed. Rather, case study results support the notion that a learning infrastructure forms an integral aspect system of the organisation. In that sense, the learning infrastructure may encompass a training function, but is not limited to that.

From the examples provided by the case teams, it appears that a learning infrastructure can be more or less formalised. Within Solvision, very little formalisation has taken place, and much depends on the initiatives of team members and team leader. Extending personal development budgets is an interesting organising mechanism in this team. In Heineken and Xerox, part of the learning infrastructure is formalised and organised in a traditional sense. For instance, a PDP policy has been implemented, with clear tasks for the team leader and HRD staff, and accompanying rules, budgets and tools to realise a yearly PDP cycle. And in Heineken, an elaborate structure for on-the-job training is being implemented.

However, other parts of the learning infrastructure are not formalised, or very little. Not all of the support can be organised in the traditional sense (creating formal roles, budgets, tasks). Social support for informal learning in the workplace for example, cannot be organised in such a way. However, that does not mean that there is *no* organising mechanism. Rather it appears that more *organic* mechanisms are in place. The case studies clearly identified the 'pull mechanism' for social support (team members have to ask for help to receive it) for instance, which is at work in Solvision, where team members do not share the same physical workspace. Also it became clear that when team members work in each other's vicinity, as is the case in Heineken, a 'push mechanism' (team members offering help) may exist. When the natural mechanisms do not function satisfactorily, the team may decide to install more mechanisms, thus formalising processes to some extent. This was the case in Xerox, where certain rules were applied for when to ask a colleague for advice, thus lowering the threshold of asking for support. By itself, the pull mechanism was not strong enough, in this particular team.

Types of learning infrastructures?

The case teams all appeared to have a different learning infrastructure. Next to the elements that they shared, there were significant differences in *support* and *conditions*

for learning. The number of cases is too small to detect any patterns in these differences, but it might very well be that such a pattern exists, and that a typology of learning infrastructures can be made.

Table 6.7 Important elements in the learning infrastructures of the case study teams

Activities of learners		*Learning infrastructure*	
		Support	*Conditions*
Learning activities	• Informal learning in the workplace: unintentional & intentional	*Social support:* • Team leader: supporting learning 'hands on', and (more implicitly) creating conditions for learning • Co-workers: providing advice and support *Material support* • Information sources	*Conditions at the organisation level:* • Top management advocating importance of learning • Learning integrated in organisational culture *Conditions at the team level:* • Fitting team size (not too large, not too small), • Appropriate team composition (enough variety, but not too much) • Team leadership function providing room and support for learning *Conditions at the workplace level* • Appropriate amount of variation, • Appropriate level of autonomy • Balanced work pressure *Conditions at the individual level* • 'Drive' for learning, • Ability to find and obtain support for learning
	• Formal learning: On-the-job & off-the-job	*Social support*: • Team leader: choosing learning activities, • HRD staff: providing training activities *Material support:* • Off-the-job training programmes • In Heineken: On-the-job training programmes	
Regulatory activities	• Identifying learning needs	*Social support:* • Team leader: supporting the identification of learning needs. *Material support:* • PDP's	
	• Assessing learning outcomes	*Social support:* • Team leader: assessing progress regularly *Material support:* • PDP's	
	• Managing learning process	*Social support:* • Team leader: stimulating motivation and awareness of learning *Material support:* • PDP's	

7 Conclusions and discussion

This final chapter summarises the main outcomes of the study, and contains a discussion of those results. Section 7.1 provides a brief outline of the research results. Section 7.2 explores some implications of the research results regarding how learning infrastructures in practices can be managed and developed. And, finally, section 7.3 contains recommendations for practice and highlights some promising directions for further research.

7.1 Research questions: conclusions

Self-managing work teams as an organisational concept can be traced back to the 1940s, when the concept was first developed as part of the Socio Technical Systems Design theory. In recent years, the use of self-managing work teams has increased considerably. The main reasons are not only to increase productivity, but also to create a strong link between learning and working. To an increasing degree, external developments place a greater demand on organisation's flexibility and their capacity for improvement and innovation. The popularity of the concept of self-managing work teams can be seen in this light. As organisations strive to become learning organisations, they search for ways to increase opportunities for individual and organisational learning. Self-managing work teams are believed to provide a fitting context to achieve both. It is from this perspective that self-managing work teams were studied in this PhD project.

As a prerequisite for supporting organisational learning, it is imperative that self-managing work teams provide a nurturing context for individual learning. Current evidence however, suggests that though teams potentially constitute a rich learning environment, their potential in this respect is not always fulfilled. Therefore, the issue of supporting learning deserves specific attention.

Problem statement and research questions

The main problem statement underlying this study was the question how learning within self-managing work teams can be facilitated in a structural way.

This problem statement was translated into three research questions, all related to *self-managing work teams as an environment for individual learning:*

1. In what way(s) do members of self-managing work teams acquire and develop competences? In other words: which types of learning activities can be distinguished?
2. In what way(s) can these learning activities be supported?
3. What conditions promote or inhibit learning within self-managing work teams?

Together, general *conditions* which influence learning and concrete *support* for learning (research questions 2 and 3) constitute the *'learning infrastructure'* of self-managing work teams. The notion of a learning infrastructure was used in this study in order to examine and describe support for learning within teams from a comprehensive perspective (including not only formal learning opportunities, and people and tools involved in supporting such learning, but also informal workplace learning). It can be considered as an attempt for a practical translation of current views on HRD, which emphasise both formal and informal learning, and in which supporting learning is a shared responsibility of managers, employees and HRD professionals.

This section describes results for each research question.

Learning activities

The first question was: In what way(s) do members of self-managing work teams acquire and develop competences? In other words: what types of learning activities can be distinguished?

In order to operate effectively within self-managing work teams, members need three types of competences:

- Operational competences (necessary to fulfil day-to-day work within the team, for example operating machinery, but also planning, maintenance and other coordination and management tasks);
- Social competences (necessary to function effectively within the team, to cooperate with others, for example active listening, conflict resolution, participating in group meetings, providing others with feedback);
- Improvement/learning competences (necessary to participate in improving team performance, for example: analytical skills, a broad view of the organisation and the role of the team within this context, knowledge of performance targets, problem solving skills, quality improvement techniques).

Interestingly enough, though competences needed for learning and improvement can be separated from operational competences, in the cases, respondents usually see the first as an integral part of the latter.

How do team members build and develop competences in these areas? Research results indicate that informal workplace learning is very important in self-managing work teams. The workplace serves as a 'learning environment', both for ‘spontaneous’, unintentional learning, as well as for intentional learning. Particularly in the case studies, team members and team leaders were found to use the

workplace deliberately for learning opportunities (e.g. by taking on certain challenging tasks or projects).

Next to informal learning, formal learning activities are also widely used: team members attend on-the-job as well as off-the-job training programmes and courses.

Formal and informal learning appear to be complementary to each other, each has its own specific merits. Informal learning appears to be used and considered mainly as a tool for development of the more 'soft', and less tangible competences, for instance social skills or insight in the political side of organisations. Formal learning activities are used for either very specific learning needs (e.g. learning how to use a specific tool, or update knowledge on certain ICT applications) or for more general long-term learning needs (e.g. a vocational education programme). Mulder (2001) refers to such learning goals as job/function-related and career-oriented learning needs, respectively.

In general, team members appear to be expected to fulfil an active role with regard to *managing their own learning and development* process. They are also actively involved in another so-called 'regulatory' learning activity: *identification of learning needs*. Usually they determine learning needs for a specific year (or other timeframe) together with the team leader, in PDP meetings. Likewise, they actively participate in *assessing learning outcomes*, in the sense of evaluating general progress (again in yearly PDP meetings) (evaluation of specific learning activities plays a limited role).

Learning infrastructure

The study aimed to construct a framework for the learning infrastructure of self-managing work teams. As such, the literature review, group interviews and case studies provided insight into those elements of the learning infrastructure of self-managing work teams, which appear to be especially important. Though the empirical basis is not yet large enough to allow for any definite answers regarding essential elements, some indications were provided by the data in this study.

Support for learning

The second research question concerned the first element of the learning infrastructure: In what way(s) can learning activities within self-managing work teams be supported?

Social support of team members, team leader, top-level managers, HR(D) staff appears to be a very important element in the learning infrastructure. All provide a different type of support. Team members are especially important in providing hands-on support in learning on-the-job (for example by giving advice or by helping to solve difficult problems). Team leaders also fulfil a 'hands-on' role in clarifying learning needs, assessing progress and supporting learning on-the-job (for example by coaching or giving advice). Team members appear to highly appreciate these

types of practical support. It is however, sometimes difficult to realise support from team members or team leaders (for instance, people sometimes feel inhibited to ask for help, or because work pressure is high). Case results indicate that this type of support can be *regulated* by different mechanisms. Next to the pull mechanism (providing support on demand), the push mechanism (offering support pro-actively) is also important.
Next to practical support in learning, team leaders also fulfil a more 'strategic' role, by safeguarding and promoting opportunities for informal workplace learning, for example by fostering conditions for learning (e.g. taking on temporary staff to create time for learning). This role is particularly stressed in literature and group interviews, and examples were also found in the cases. In some instances, this role appears to be fulfilled rather naturally, not very deliberately or explicitly, but rather as an integral part of leadership activities.
Top-level managers play a role in the background, by stimulating motivation and creating favourable conditions for learning on a general level.
HR(D) staff's main role is to organise training activities, and develop learning tools (such as PDP's and learning materials).

Material support also plays a role in the learning infrastructure, albeit less dominant. Courses and training programmes are the most obvious examples. But other examples include: tools for identifying learning needs and making learning plans (PDP's) and information supporting informal learning, (such as books, manuals, or learning materials). Case results suggest that the amount and type of material support is more elaborate within companies with internal HRD professionals, than in those companies without such specialised staff.

Conditions for learning

The third and final research question relating to teams as learning environments is: What conditions promote or inhibit learning within self-managing work teams?

General conditions for learning also appear to influence learning within the team and therefore constitute an important part of the learning infrastructure. Some of the support for learning may even be targeted towards creating favourable conditions for learning, though this is not possible for all conditions. On the level of the *organisation*, important positive conditions include learning and self-management forming an integral part of the organisational philosophy, top level management communicating this philosophy (not only verbally) and a culture, in which learning is felt to be important for the organisation. On the *team* level, it was found that team size, team composition and the team leadership function were important conditions. On the level of the *job/workplace* important conditions included variation, autonomy and work pressure. Finally, also some *individual* conditions were found to play a role. Most notably: motivation or a drive for learning, and skills in obtaining support for learning. This conclusion is congruent with an often repeated warning considering implementing self-managing work teams. Several studies show that it is very difficult

to successfully implement self-managing work teams if the rest of the organisation is not (re)designed to fit this concept (see chapter 1). Apparently it is also difficult to achieve optimal learning conditions within a team if the organisational context does not support learning.

Conclusion

In sum, it can be concluded that informal learning is a very important way for members of self-managing work teams to build and expand their competences. Team members are generally expected to fulfil an active role with regard to their own learning processes. Team leaders, other team members and even higher-level managers support them, either by providing practical support for (informal) learning and by fostering favourable learning conditions. HRD professionals' contribution appears to be greatest with regard to material and social support for the more formal types of learning (the most visible element in the learning infrastructure). Moreover, general conditions also influence the amount and quality of learning within a team and can – as such – be part of a team's learning infrastructure.

7.2 Managing and developing learning infrastructures

In this study, an attempt was made to map important elements of a 'learning infrastructure' in self-managing work teams, as an organisational system that is intertwined with all other aspects of the work environment. What conditions are important to foster learning? And what kind of support can be provided to stimulate and enhance learning?

As such, the study has a strong *design* orientation. The objective was to identify or construct a system, or infrastructure, for supporting learning within self-managing teams, in order to find ways to safeguard, create *and* improve it. And thus, to support learning in an on-going and structural way. The notion of, and the term, 'learning infrastructure' was chosen deliberately to reflect this orientation.

The 'learning infrastructure' consists of a broad range of initiatives, from targeted training interventions to designing jobs that challenge learning in team members. Besides factors that are directly related to HRD (such as training), more general organisational characteristics such as team members, team size, management style, information systems and team objectives, also play role in determining learning opportunities, and are therefore included in the infrastructure. As such, the learning infrastructure is an *integral* part of the organisation as a whole. As was discussed in chapter 3, the notion of a learning infrastructure is compatible with current views on HRD functions in organisations. Whereas the HRD function (all activities, people and procedures with regard to HRD) used to be considered as primarily a 'training function', a - sometimes relatively peripheral - subsystem of the organisation which could be readily identified, it is now increasingly seen as a more diffuse subsystem, an integral part of the organisation as a whole. Likewise, rather than a clear and

separate business function, the learning infrastructure is approached as a naturally developed '*ecology*'. That is: a naturally formed system, balanced, dynamic and existent in any organisation, even if it is not explicitly recognised.

The results of the study can be used a tool for mapping a team's learning infrastructure: making it explicit. This is an important step, allowing for a more conscious and deliberate management of such an infrastructure, and thus safeguard or even improve support for learning.

Mapping learning infrastructure

Probably the most valuable aspect of analysing and mapping a team's learning infrastructure is the heightened awareness of important factors in learning. This can help an organisation to protect and maintain certain conditions that are known to enhance learning, even though they may be at odds with other organisational objectives, such as increasing directly productive working hours. This is very important.

Research by Stamps et al. (1998) shows that at times, organisations take decisions that are valid for business-related reasons, but negatively impact learning opportunities. Especially in the case of general conditions for learning, management and employees are very often unaware of the role they play. Stamps provides an illustrative example from a company that used to have a large cafeteria, where most of the workers enjoyed coffee and lunch together. After an internal productivity analysis, it was found that workers spent relatively much time in the cafeteria. This time was considered to be unproductive. In an effort to increase productivity rates, it was decided to try to cut back on the time people spent on lunch and coffee. Therefore, the company reduced the size of the cafeteria by half, so that fewer workers could sit there, hoping to encourage people to take brief lunch breaks. After hearing about the plans, workers objected, and pointed out that they not only used their lunch breaks for chitchat, but also saw it as a highly valued change for meeting co-workers and exchanging ideas and knowledge. Consequentially, it was decided to turn the remaining half of the cafeteria into a meeting room. But eventually, workers still felt they missed a very valuable opportunity for informal learning (that cannot be replaced with formal meetings) after the reduction of the cafeteria's size (Stamps, 1998).

'Managing' a learning infrastructure

Obtaining a clearer picture of a team's learning infrastructure, through analysis, is an important prerequisite for managing and protecting this learning infrastructure. As was discussed in chapter 5, managing or organising the workplace as a learning environment is a more difficult - and profoundly different task from managing a training department. To gain more insight in the nature of this managerial process, it

can be compared to management of communities of practice, which are also organic learning systems.

A community of practice is a group of people informally bound together by shared expertise and passion for a joint enterprise. Currently, building and nurturing such self-organising learning groups is increasingly regarded as a very important tool in building learning organisations and creating new knowledge. Communities or practice differ from self-managing work teams, in the sense that they are self-organised and informal structures, and have as their primary goal to build and exchange knowledge and develop member's competences (whereas a team is designed by management, is a formal structure, and its primary purpose is to deliver a product or service). But their existence corroborates the social dimension of support for learning, because it underlines the significance of social support for learning. People look each other up in order to learn together. Just like learning infrastructures, communities of practice probably exist in all organisations, but only a small group of companies explicitly encourages and supports such learning networks, because they see in them a valuable tool to create and share new knowledge (Wenger & Snyder, 2001).

Managing such learning networks is very important, according to Wenger & Snyder:

> 'The paradox of such communities is that although they are self-organizing and thus resistant to supervision and interference, they do require specific managerial efforts to develop them and integrate them into an organisation. Only then can they be fully leveraged.'
>
> (Wenger and Snyder, 2001, p. 2)

But the tools and approach to manage such networks is different from that in traditional management approaches. Rather than 'managing' them, communities of practice need to be supported and nurtured, in ways that align with the organisational structure and culture. Wenger and Snyder revert to the metaphor of tending to a garden: they benefit from cultivation.

> 'Like gardens, they respond to attention that respects their nature. You can't tug on a cornstalk to make it grow faster or taller, and you shouldn't yank a marigold out of the ground to see if it has roots. You can, however, till the soil, pull out weeds, add water during dry spells, and ensure that your plants have the proper nutrients. And while you may welcome the wildflowers that bloom without any cultivation, you may get even more satisfaction from those vegetables and flowers you started from seed.'
>
> (Wenger and Snyder, 2001, p. 10)

Rather aptly, they conclude that the same principle holds true for organisations that 'grow' communities of practice. This same metaphor can be applied to the management of a learning infrastructure, insofar as this is seen as ecology. Like communities of practices, learning infrastructures:

- Often already exist, they can be identified and 'cultivated';
- Have the human, or social element as its most essential element;

- Benefit from a fitting organisational context.

So instead of *managing* learning infrastructures, it is perhaps more fitting to speak of *identifying and nurturing* them. This is not solely a task of managers; active involvement of team members is also necessary. It is not possible to 'mandate' or design a learning infrastructure, rather it has to be built with the active involvement of workers. For instance: a factor such as motivation cannot be 'implemented' by a manager. People can only develop motivation personally (but they can be supported and challenged in doing so). Likewise, it is impossible to create a culture in which people provide each other with open feedback without the active participation and commitment of people within the team. These are just a few examples.

Thus, developing a learning infrastructure is essentially a process of reflecting on the current situation, identifying elements that are open for improvement, and trying to realise those improvements. This approach to managing and improving learning infrastructures is congruent with the *development perspective* towards organisational design and change. This is a more communicative and dynamic approach than the more *rational and technical* design perspective. (Re)design and change go hand in hand (control over the change process is not only pro-active, but also retro-active), and the people 'in' the system are important actors in realising changes (Boonstra, 2000).

7.3 Recommendations

This final section contains some more general reflections on the study's results. Subsection 7.3.1 contains recommendations for practice, whereas subsection 7.3.2 proposes some directions for further research in the area of learning infrastructures within self-managing work teams.

7.3.1 Recommendations for practice

The results from this study point out several areas that are worthwhile to consider by organisations that want to strengthen the learning opportunities within teams.

Actively managing conditions and support for learning

A first, rather general advice for team leaders and HRD professionals, based on this study's results, is to regard the team environment through the lens of the learning infrastructure, and in that way uncover important elements for their own specific situation. The framework itself can be used as a means to conduct a 'scan' of a team's learning environment:

1) How important are each of the following types of learning activities?
- Unintentional, spontaneous learning on-the-job
- Intentional informal learning, on-the-job

- Formal learning, on-the-job
- Formal learning, off-the-job

2) Do team members generally also fulfil regulatory tasks with regard to learning?
- Determining learning needs
- Assessing learning outcomes
- Managing learning process

3) Which types of support are provided for those learning activities and regulatory activities?
   - Social support by
     - Team members
     - Team leader
     - Management
     - HRD professionals
     - Others: …..
     - What mechanism regulates this social support?
   - Material support in the form of:
     - On-the-job training
     - Information sources
     - Off-the-job training
     - PDP's
     - Other…..

4) What conditions influence learning?
   - At the organisational level (e.g. learning integrated in philosophy and culture; top management supporting importance of learning);
   - At the team level (e.g. team size, team composition and team leadership function);
   - At the workplace / job level (e.g. adequate variation, autonomy and work pressure);
   - At the individual level (e.g. motivation for learning, and skills in organising support for learning).

After making such an inventory of important elements in the learning infrastructure, the learning infrastructure can be evaluated: is it adequate for providing support? What support elements can be strengthened? How can conditions for learning be improved?

Mapping the learning infrastructure can be done either in a very general sense ('quick and dirty', e.g. team leader or HRD staff reflecting on learning infrastructure) or by means of a more in-depth analysis (e.g. by a group session with team members, or by interviewing team members). HRD staff can fulfil a supportive role in carrying out the scan. Either way, the analysis of the learning infrastructure will lead to a sharpened picture of those elements that are worthwhile to protect and

maintain, and elements that can be improved. Thus it will give concrete and specific clues for building a learning environment within the team.

Investing in intentional informal learning

From this study, it became apparent that workers within teams do intentionally use informal learning opportunities, to a varying degree. Team leaders sometimes provide assistance in selecting and creating such opportunities. In some cases they are even documented, in a PDP for instance. In general, it appears that the use of informal learning opportunities occurs rather intuitively, and also, some team members and team leaders invest more actively in such learning than others. It is reasonable to assume therefore, that there is room to improve the effectiveness of this type of learning. Since it is known (e.g. Simons, 1999a) that many people tacitly hold inaccurate assumptions on learning, it seems worthwhile to invest in creating a good understanding of 'learning'. Thus, intentional informal learning can be capitalized upon, not by formalizing and planning such learning activities, but rather by fostering team members' and team leaders' understanding of conditions for learning and increasing their knowledge of strategies for informal learning. Such knowledge will help them to use this type of learning activity more effectively. HRD staff might fulfil an important role in this respect, transferring their expert knowledge on creating learning situations.
An issue of special importance regarding deliberate workplace learning, is that it appears to be used mostly for general, 'soft', and sometimes ill-defined competences (for example 'growing into', or preparing for a certain role, or: increasing awareness of political aspects of organisations). It would be worthwhile to explore whether informal learning opportunities could also intentionally be used to develop more concrete competences, that are now usually looked for in training activities.

Role of the team leader

The team leader is a very important actor in a learning infrastructure, since he can influence many aspects. He can provide both hands-on support for learning *and* influence conditions for informal learning – especially within the team context. The study's results indicate that team leaders are aware of this important role in some situations, and to some degree. In general, it seems logical to invest in the team leader, by support him in both aspects:

- The role of hands-on supporter of learning, generally referred to as the coach role, is very difficult. Especially when team leaders are not experienced in this activity. Since coaching is not a universal activity, but rather demands a situational approach, it seems advisable that team leaders not only receive off-the-job training in coaching, but also receive practical coaching. For instance by on-the-job coaching, or by creating training situations in which both the team leader and the team participate (instead of a formula whereby team leaders are trained separate from the team). In that way, the team and team leader can build their new roles together.

- The role of 'manager of the team as a learning environment' is sometimes very implicit, and hard to distinguish from the overall portfolio of team leader tasks. Since this role is so important, it seems advisable to help team leaders expand this role more explicitly. Again, this can be realized by a combination of off-the-job activities and on-the-job support. Mapping a learning infrastructure may already make team leaders more aware of important conditions for learning they are able to influence. Collegial consultation with other team leaders may also be fruitful in order to discover new opportunities for facilitating learning within the team. HRD staff can fulfil an important role in this regard by serving as a team leader's 'right hand': giving advice on how to foster conditions for learning and helping to realize these conditions.

Managing formal *and* informal learning

The concept of the learning infrastructure allows for an integral analysis of support for formal and informal learning. In turn, this comprehensive view opens up possibilities for linking the two. Ideally the two should not be considered as two separate worlds, it is possible to create a relationship. Strengthening the connection between formal and informal learning may be a point worthy of attention. The experiences of engineers within the Xerox-case in this study, are illustrative in this respect. The training department of this company complemented formal training programmes with social support for informal learning that occurred after the course, in the workplace. This type of 'blended learning' is worthy of more exploration.

7.3.2 Directions for future research

In general, the topic of learning infrastructures is not studied very intensively yet. So, there are many interesting vantage points for further research. Below, some suggestions are provided.

Exploring learning infrastructures

The study that was reported in this thesis was rather exploratory in nature. Because of this, and the use of case studies, the knowledge base on the nature of learning infrastructures is still very modest. It would seem advisable to follow-up with more large-scale studies, aimed at validation and generalisation of the findings from this study.

In such follow-up, descriptive studies could serve to increase our understanding of the nature of learning infrastructures. The results from this study still form a rather general picture, which can be refined and detailed to a great degree.

Perhaps it is even interesting to include not only companies with self-managing work teams, but also to describe learning infrastructures within other companies. As it becomes increasingly important for companies to manage the workplace as a

learning environment, this might provide a relevant issue to pursue further for a larger group of companies. It could also shed light on the issue of how unique results from this study are for self-managing work teams, or if they could also hold true for other organisational forms.

In order to achieve greater scale, a survey under a larger group of organisations (and more teams within each of these companies) might seem an appropriate method. The results of this study can be used to design an appropriate strategy for data collection, as well as ensuing instruments.

Typology of learning infrastructures

Just as biology uses classifications of certain ecological systems, it might be interesting to see if there are different learning infrastructures, and whether these are related to different organisational characteristics (such as size or economic sector) and work characteristics (such as amount of autonomy or type of professional competences).

An important question is whether it is possible to define a certain typology of learning infrastructures, for instance in relationship to general organisational characteristics or work features. As it appears now, there is not 'one' learning infrastructure, but each case organisation has a different infrastructure. Some examples of how learning infrastructures differ:

- In the Solvision team, the social environment for learning is the dominant feature of the learning infrastructure, whereas in the Heineken team an extensive training programme structure is also an essential element.
- In Solvision, consultation of colleagues is left to the individual team members. They individually decide when, how and for what issues they ask feedback and advice from others. In Xerox, a procedure is defined which prescribes when team members have to ask co-workers for advice in solving a problem. And in Heineken, people can directly see if other team members need assistance, since they share a workspace. The regulatory mechanisms for social support are different in all cases.
- In Solvision, team members collect their own support materials, such as books and manuals. Whereas in Xerox, each team member receives a laptop with an extensive library and other learning materials from the company.

All in all, results indicate that there is large variety in learning infrastructures. This variety is probably not at random, but determined by certain organisational characteristics (e.g. bureaucratic history or greenfield situation?), team (e.g. sharing a workspace or not) or work features (e.g. rather predictable or unpredictable?). Therefore it is not unlikely that a typology of learning infrastructures could be developed.

Research in this area will benefit from a large-scale approach. First, it is necessary to pinpoint several relevant background variables, which can be believed to influence the nature of a company's learning infrastructure (such as: size, branch or age). Then, it would seem interesting to establish a large group of companies, that work with self-managing work teams and that vary across the relevant background variables. By gathering data on the learning infrastructures of these companies and trying to ling certain features of these infrastructure with the company background variables might gain more insight in different typologies of learning infrastructures, and the relationship to company characteristics.

Changing and developing learning infrastructures

This study focused primarily on *describing* learning infrastructures. A next step is to investigate how such structures might be changed, if this is considered necessary to make improvements. The previous section already postulated several venture points for this issue, but more research is needed to analyse this question thoroughly and to come up with useful guidelines for HRD practitioners and line managers.

At this point in the development of theory it does not seem very apt to adopt a large-scale approach. Rather a small-scale study, allowing for in-depth descriptions of change processes, seems more appropriate. Perhaps even action research methods might be suitable, whereby the researcher actively engages in trying to establish changes and describes both the efforts and the results in great detail.

Role of the manager and team leader

Though much of the current literature on HRD stresses the importance of committed managers, who coach and support their employees in learning, much ambiguity still remains on their role. Recent management studies indicate that managers try to fulfil a coaching role, and are sometimes even convinced that coaching is an important part of their work, but that employees do not always *perceive* this coaching element (De Wit, 2002). Likewise, this PhD-study also indicated that managers, especially team leaders, play an important role in supporting learning within the team. Based on their own experience, they even develop personalised, sometimes highly implicit, assumptions on learning, and action theories on how to support it (for instance, several of the managers in this study stressed the importance of motivation for learning). But their role deserves more elaborate consideration.
Possible research questions could be:

- What does the role of managers with regard to employee learning look like? What tasks do they perform? Are there different roles for different hierarchical levels?
- 'What's in it for them'? Why do they support employee learning? (Are managers rewarded for stimulating learning? Do they provide support from a personal

conviction that learning is important? Do they see a clear link to business goals or department objectives?
- How are managers prepared for and supported in their role of providing support for learning? What tools and practical theory do they have?
- What is the effectiveness of their involvement in employee learning? (How) Do employees view and value their support?

Self-managing work teams and learning organisations

This study only tried to establish links between self-managing work teams and the concept of the learning organisation in an analytical way. No empirical evidence was gathered. Considering the relevance of the issue, however, it seems warranted to devote more interest to this specific relation. Building the capacity for organisational learning is one of the primary reasons why companies nowadays implement self-managing work teams. It is widely regarded as an important tool to build learning organisations, but hard evidence is hard to come by.

This issue could be studied in several ways. A promising approach appears to be to reconstruct 'organisational learning' moments, and to clarify the role of self-managing work teams in establishing this learning. Looking back, it should be possible for companies to identify examples of both single loop and double loop experiences. Analysing these with regard to issues such as the start of the learning process, people that were involved in realising the learning outcomes, etcetera, might shed some more light on the question if self-managing work teams were indeed important in realising the learning process.

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Notes

Chapter 1

i For a 'first hand' description of these early days of STSD, see Trist, 1993. He was one of the people who discovered the autonomous groups in the Durham mines, and is one of the founders of STSD. He offers a lively description of the early days, his enthusiasm for the new form of organisation, and the opposition they met from the employers in the mines.

ii See for an overview of the several 'phases' in the history of STSD: Van Eijnatten, 1992 en 1993

iii Research by Pasmore among 134 organisations that had adopted STSD principles indicated that 53% had implemented self-managing work teams (Pasmore, 1988).

iv See for a well-written summary: Peeters, 1996; De Sitter et al., 1997 or Van Hooft et al., 1996

v Examples of these names: produktiecel, (semi-)autonome taakgroep, hele taakgroep, zelforganiserende groep, zelfsturend team (Kuipers & Van Amelsvoort, 1990), self-managing work team, self-managing work team, empowered work team.

vi See also Gulowsen, 1972

vii For a more complete review of 'traditional' forms of organisation and the rationale behind these organisational structures: see Kuipers & Van Amelsvoort, 1990

viii Meanwhile, the societal relevance of a good 'quality of working life' should not be underestimated, as Ruël (1994) points out. A higher quality of work life leads to a lower level of absenteeism and rates of sick leave. Next to the psychological and social benefits this brings, it also brings considerable financial advantages to society.

ix There has been only a limited amount of rigorous research into the effectiveness of self-managing work teams. The need for more research is very well illustrated by the fact that almost all reviews of existing research and articles which report research, make a plea for more, and especially more rigorous studies (e.g. quasi-experimental designs) into the results of self-managing work teams.

In general, there appears to be substantial variance in research findings with regard to the impact of self-managing work teams. Guzzo & Dickson (1996) propose that the lack of general trends may indicate that the effects of self-managing work teams are highly situationally dependent:

> 'That is, the effects of autonomous work-group practices may depend on factors such as the nature of the work force (e.g. its dominant values) and the nature of the organisation (e.g. information and reward systems)' (Guzzo & Dickson, 1996, p. 326).

They report a (probably unique) study that addressed this specific question in a laboratory experiment, which provided evidence that self-managing work teams can be expected to be more successful in turbulent environments. The question of 'fit' between self-managing work teams and organisational environments is worthy of further investigation.

Interestingly enough, research into the effectiveness of self-managing work teams seems to centre more around measuring attitude change, than on productivity, cost and other economic data (Goodman et al, 1990; Dunphy & Bryant, 1996). Research into cost-benefit analysis would form a useful contribution.

Another field in which more research is welcome, is the effectiveness of the concept in service-organisations. Most studies to date focus on manufacturing organisations, and it is by no means clear

whether these can be generalized to service organisations. But this group of companies is also experimenting with self-managing work teams.

Chapter 2

i It is important to realise that mistakes or failures are not the only source for organisational learning. Several authors stress the importance of so-called *generative* learning, based on a strong vision, see for example Senge, 1990.
ii For an elaboration of the differences between organisational learning and learning organisations: see Ortenblad, 2001.
iii For an overview see Kuipers & Van Amelsvoort, 1990; Tjepkema, 1993; Banner & Gangé, 1995; Pedler, Boydell & Burgoyne, 1991; Ansoff, 1985; Lawler, 1986
iv No organisation will suffer from *all* of the learning barriers mentioned here. It is more of an overview of *possible* factors hindering the learning process.
v Of course, individual characteristics such as intellectual capability and personality traits that cannot be ruled out by changing the environment also influence a person's learning ability.
vi Hands-on management is often also deeply ingrained in the culture, as some companies experience when trying to change existing management procedures. Hands-on management is sometimes difficult to bread, because it is sometimes caused by (implicit) assumptions that a 'good' manager is in control, sometimes by a desire to support and take care of employees, and sometimes just as a matter of habit. Many managers have started their career at the bottom of the ladder, and they sometimes still feel more at home in the operational issues than in the managerial sphere.

Chapter 3

i The first two questions were already formulated at the beginning of the project. The third was added *during* the project.

Chapter 4

i There is another way in which learning is an integral part of working life in self-managing work teams: we can also consider the implementation and development of self-managing work teams as a learning process. No team is 'self-managing' from the start; teams develop themselves gradually in that direction. This dynamic nature of teams is included in the definition underlying this study (chapter 1). Based on her study, Hoogerwerf (1998) makes a plea to explicitly consider the implementation and team development process as a learning process, and to support it as such. Not only team members learn in this process, but also team leaders (top) managers and other parties such as consultants (Van der Zee, 1998) increase their ability to realise self-management, and teamwork along the way.
ii For an overview of different (research) perspectives on on-the-job learning see: Onstenk 1994 en 1997 and Van Onna, 1985b.
iii This model is congruent with Keller's performance model, describing three factors which generally influence performance (Keller, 1992):
- capability (in this case: competence and learning skills);
- motivation (in this case: for learning);
- opportunity (in this case: possibilities for learning during work).

iv For an overview of definitions of on-the-job training: see De Jong, 1996 and Van der Klink, 1999.

Chapter 5

i In the first and third meeting, this categorization took place *during* the interview. In the second meeting, it was made *after* the meeting, by the researcher.
ii However, research suggests that other expected positive learning effects of improvement teams, such as increased communication skills, are often not realised (De Lange-Ros, 1999).

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i However, there is one difference: strictly speaking, self-managing work teams are permanent elements in an organisation structure, and teams within Solvision are always temporary. They can be considered a mixture of a self-managing work team and a project team.

Samenvatting (*summary in Dutch*)

Aanleiding en probleemstelling

Zelfsturende teams komen steeds vaker voor in Nederland. Vooral in productiebedrijven, de sector waarvoor het concept oorspronkelijk is ontwikkeld. Maar in toenemende mate experimenteren ook organisaties in de zakelijke dienstverlening en onderwijs- en zorginstellingen met deze organisatievorm.

De belangrijkste motieven voor het invoeren van zelfsturende teams zijn gerelateerd aan de bedrijfsvoering. Organisaties hopen met dergelijke teams bijvoorbeeld de productiviteit te verhogen, kostprijzen te reduceren of de flexibiliteit en klantgerichtheid te versterken. Daarnaast spelen doelstellingen op het terrein van 'kwaliteit van de arbeid' een rol, zoals het terugdringen van het ziekteverzuim, verhogen van de arbeidssatisfactie of het versterken van betrokkenheid van medewerkers. Een toenemend aantal organisaties ziet in zelfsturende teams echter (ook) een hulpmiddel om de ontwikkeling richting lerende organisatie te bevorderen: ze gebruiken teams als onderdeel van een gerichte 'leerstrategie'.

Een zelfsturend team is een groep medewerkers, die als team de verantwoordelijkheid dragen voor alle activiteiten die nodig zijn om een bepaald, duidelijk omschreven, product of dienst te leveren aan een interne of externe klant. Het team is – tot op zekere hoogte – verantwoordelijk voor het managen van zichzelf en de eigen taak. Hiertoe heeft het team de beschikking over relevante informatie, benodigde competenties en fysieke hulpbronnen, en heeft het de autoriteit om zelfstandig beslissingen ten aanzien van het werkproces te nemen (bijv. om verstoringen op te lossen of het proces te optimaliseren).

De meerwaarde van zelfsturende teams in het perspectief van de lerende organisatie is vooral dat deze teams in principe een gunstige leeromgeving vormen. Onder meer door de mate van variatie in taken, de mogelijkheid om met collega's samen te werken, en de verrijking van taken (doordat ook zaken als planning en kwaliteitscontrole tot het takenpakket behoren) hebben teamleden mogelijkheden al doende te leren. Maar het bewaken van de leermogelijkheden vraagt wel expliciet aandacht. Allerlei factoren, zoals tijdsdruk, of slechte communicatie in het team, kunnen deze verstoren. Dit onderzoek richt zich op zelfsturende teams als leeromgeving, en het bevorderen van leerprocessen binnen de context van het team.

Onderzoeksvragen en opzet

De centrale probleemstelling luidt:
Op welke manieren kan het leren binnen zelfsturende teams ondersteund worden?
Hiervan zijn de volgende onderzoeksvragen afgeleid.

1. Op welke manier(en) ontwikkelen leden van zelfsturende teams hun competenties? Met andere woorden: welke soorten leeractiviteiten kunnen worden onderscheiden?
2. Op welke manier(en) kunnen deze leeractiviteiten worden ondersteund?
3. Welke condities bevorderen of belemmeren het leren binnen zelfsturende teams?

De ondersteuning en de condities voor leren vormen samen de 'leerinfrastructuur' van zelfsturende teams. Het doel van het onderzoek was om – in antwoord op de centrale probleemstelling - een model voor deze leerinfrastructuur te ontwikkelen.

Om de onderzoeksvragen te beantwoorden, zijn langs verschillende wegen data verzameld. Elke stap in de dataverzameling was telkens gericht op elk van de drie vragen.

Op basis van een *literatuuronderzoek* en *verkennende interviews* met praktijkmensen en experts is een eerste kader voor de leerinfrastructuur van zelfsturende teams opgesteld.

Vervolgens is dat kader met behulp van drie *groepsinterviews* (en aanvullend *literatuuronderzoek*) getoetst en aangevuld, en zijn empirische gegevens en inzichten verzameld omtrent manieren om het leren binnen zelfsturende teams te ondersteunen (het kader 'vullen'). De interviews duurden elk één volle dag, en kenden telkens tussen de 10 en 15 deelnemers. Om de interviews te faciliteren is een combinatie van de critical incidents methodiek en Metaplanmethode gebruikt.

Tenslotte zijn beschrijvende *case studies* gemaakt van de leerinfrastructuur van drie zelfsturende teams. De doelstelling van deze stap was drieledig:

(a) valideren: verdere ondersteuning van het beeld van de leerinfrastructuur, via het verzamelen van aanvullende empirische gegevens,
(b) evalueren: wegen van de verschillende elementen uit de leerinfrastructuur, om zo een beeld te krijgen van welke onderdelen het meest belangrijk zijn,
(c) verhelderen: meer begrip krijgen van de aard van de leerinfrastructuur van teams, onder andere door een aantal voorbeelden ervan integraal in kaart te brengen.

Er zijn drie case study teams beschreven: een team met operators uit een Heineken brouwerij; een team met service engineers van Document Company Xerox en een team IC-T consultants uit Solvision. Gegevens zijn vooral verzameld middels diverse interviews, documentanalyse en vragenlijsten.

De leerinfrastructuur van zelfsturende teams

Onderzoeksvraag 1 Leren binnen zelfsturende teams

'Leren' wordt in deze studie opgevat als het proces waarlangs mensen bekwaamheden verwerven of ontwikkelen om bepaalde taken, functies of rollen te kunnen vervullen. Leer*processen* zijn daarbij te onderscheiden van leer*activiteiten*. Processen zijn de onbewuste, deels verborgen mentale processen die leiden tot veranderingen in bekwaamheid(sniveaus). Leeractiviteiten zijn de (mentale) activiteiten die mensen ondernemen om die leerprocessen te beïnvloeden. De eerste onderzoeksvraag was gericht op het in kaart brengen van leeractiviteiten.

Dit betreft ten eerste de '*leeractiviteiten'* in enge zin: het verwerven van nieuwe bekwaamheden, via:

- informeel werkplekleren: spontaan of juist doelbewust;
- formeel werkplekleren (training on-the-job) en formeel leren buiten de werkplek (training off-the-job, cursussen, opleidingen).

Uit het onderzoek komt naar voren dat zowel het informele werkplekleren als het formele leren een belangrijke rol spelen in zelfsturende teams. Er lijkt geen voorkeur te bestaan voor een bepaalde vorm van leren, sterker nog: beide vormen zijn complementair.

Informeel werkplekleren heeft betrekking op situaties waarin het leerproces niet, of in geringe mate, is gestructureerd of gepland. Informeel leren gebeurt dikwijls spontaan en onbewust, als een soort 'bijproduct' van alledaagse werkzaamheden. Maar de werkplek wordt ook bewust als leerplek gebruikt. Mensen zoeken dan situaties of taken op waarvan ze verwachten er al doende veel van op te steken. Teamleden ontwikkelen langs deze weg vooral algemene bekwaamheden, zoals politiek inzicht in een organisatie of het vervullen van een trekkersrol in het team.

Formeel leren kan zowel op als buiten de werkplek plaatsvinden. Bij *on-the-job training* is sprake van een leeractiviteit, georganiseerd op de werkplek. In tegenstelling tot informeel werkplekleren is er structuur in het leerproces aangebracht, en is er alle tijd voor het leerproces; er wordt niet tegelijk een echte bijdrage aan het arbeidsproces geleverd. Typische vormen van on-the-job training zijn werkplek-instructie en werkplekzelfstudie. Bij *off-the-job training* of cursussen is er buiten de werkplek een leersituatie gecreëerd. Deze vorm van leren is vooral geschikt in situaties waarin oefenen op het werk niet mogelijk of niet veilig is, of waar afstand tot het dagelijks werk nodig is bij het leren (bijvoorbeeld bij leervragen in het kader van persoonlijke ontwikkeling, of loopbaanontwikkeling). Teamleden lijken formele leeractiviteiten vooral te gebruiken voor het verwerven van welomschreven technische of sociale bekwaamheden (bijvoorbeeld het kunnen bedienen van een bepaalde machine, of het voeren van acquisitiegesprekken).

Naast de leeractiviteiten in 'enge' zin, worden ook *regulatie-activiteiten* onderscheiden, deze dienen om het leerproces te sturen:

- identificeren van leerbehoeften;
- bepalen van uitkomsten van leerprocessen (evalueren);
- managen van het eigen leerproces.

Het identificeren van leerbehoeften lijkt op gezette tijden te gebeuren, bijvoorbeeld tijdens (half)jaarlijkse ontwikkelgesprekken of tussen projecten. Evaluatie van leeractiviteiten wordt in de literatuur bepleit, maar gebeurt in de praktijk vooral in algemene zin (bijvoorbeeld eens per jaar), in de zin van een reflectie op iemands algehele ontwikkeling, en niet zozeer per leeractiviteit. Het eigen leerproces managen wil zeggen dat medewerkers de verantwoordelijkheid hiervoor dragen, het leerproces monitoren en initiatief nemen. Van teamleden wordt in dit opzicht doorgaans een actieve rol verwacht, zij het dat dit in sommige organisaties al meer vanzelfsprekend is dan in andere.

Model van de leerinfrastructuur

Elk zelfsturend team heeft een leerinfrastructuur, ook al wordt deze niet expliciet (h)erkend. Deze bestaat uit de ondersteuning voor alle soorten formele en informele leer- en regulatieactiviteiten van teamleden - inclusief de bijbehorende middelen en mensen die deze ondersteuning bieden - en condities die het leren beïnvloeden. Daarmee is de leerinfrastructuur sterk verweven met de organisatiecontext, en niet een duidelijk herkenbaar of geïsoleerd organisatieonderdeel.

Als kapstok voor het model van de leerinfrastructuur is gekozen voor de hierboven beschreven leer- en regulatie-activiteiten. Voor elk van deze activiteiten is onderzocht hoe deze kunnen worden ondersteund. Hierbij is onderscheid gemaakt tussen materiële en sociale steun. Bovendien is gekeken naar de condities voor het leren binnen zelfsturende teams. Het schema op de volgende pagina biedt een overzicht van het raamwerk van de leerinfrastructuur. De volgende alinea's bieden een toelichting op de twee onderdelen van de leerinfrastructuur: ondersteuning en condities.

Onderzoeksvraag 2 Ondersteunen van leeractiviteiten

Bij de ondersteuning voor *informeel werkplekleren* valt het volgende op:

- Vooral de teamleider speelt een belangrijke rol in het ondersteunen van informeel werkplekleren: door feedback te geven, te coachen en reflectie te stimuleren, of door doelgerichte leeractiviteiten te helpen kiezen. Maar ook mede-teamleden vormen een bron voor ondersteuning bij werkplekleren. Zij geven advies, verschaffen uitleg of denken mee bij lastige problemen (bijvoorbeeld een storing, waarvoor een nieuwe oplossing moet worden gevonden: men leert hierbij al doende over de werking van een machine).

- Teamleiders, maar ook topmanagers richten zich ook op het creëren van gunstige condities voor informeel leren: bijvoorbeeld door de motivatie voor leren bij teamleden te bevorderen, of door ruimte voor leren en experimenteren in het werk te bewaken en/of te creëren.
- Ook materiële hulpbronnen kunnen een rol vervullen: met name in de zin van werkplekinstructies, manuals en een informatiesysteem dat relevante informatie biedt.

Raamwerk leerinfrastructuur

Leren		*Leerinfrastructuur*	
		Ondersteuning	*Condities*
Leer-activiteiten	• Informeel werkplekleren: Spontaan & doelbewust	• Sociale steun • Materiële steun	Condities voor leren op • organisatieniveau • teamniveau • werkplekniveau • individueel niveau
	• Formeel leren: On-the-job & off-the-job	• Sociale steun • Materiële steun	
Regulatie-activiteiten	• Identificeren van leerbehoeften	• Sociale steun • Materiële steun	
	• Vaststellen van leerresultaten	• Sociale steun • Materiële steun	
	• Leerproces managen	• Sociale steun • Materiële steun	

Ten aanzien van het *formele leren* kwamen vooral off-the-job trainingen en cursussen, en in mindere mate ook on-the-job trainingen naar voren als belangrijke elementen in de leerinfrastructuur. Opleidingsfunctionarissen verlenen ondersteuning bij het organiseren of ontwerpen van trainingen. Net als teamleiders bieden ze ook hulp bij het selecteren van trainingen. Teamleiders en collega-teamleden treden wel op als (on- of off-the-job) trainer of instructeur. In de categorie materiële ondersteuning zijn trainingsmaterialen, zoals programma's en modules, belangrijk.

Dan de *regulatie-activiteiten*. Zowel ten aanzien van het identificeren van leervragen als van het evalueren van leerresultaten, lijkt vooral een rol weggelegd voor de teamleider, die – bijvoorbeeld in individuele jaarlijkse ontwikkelgesprekken – beide activiteiten kan ondersteunen. Ook het ondersteunen van het management van het eigen leerproces lijkt vooral een taak van de teamleider, die het belang van leren, en de eigen verantwoordelijkheid van teamleden daarin, kan onderstrepen in woord en gedrag. In materiële zin spelen bij de regulatie-activiteiten persoonlijke ontwikkelingsplannen (POP's) een rol. In de literatuur en tijdens de

groepsinterviews kwamen ook andere instrumenten naar voren, maar in de cases werd alleen het gebruik van POP's consequent aangetroffen.

Bij de ondersteuning van het leren springt dus vooral het belang van de sociale ondersteuning in het oog. De teamleider en de teamleden spelen hierin de meest dominante rol. De cases tonen aan dat het mechanisme voor het verlenen van sociale ondersteuning verschilt per team. In sommige teams steunt het verlenen van ondersteuning op het pull-mechanisme (vragen om hulp), in andere is ook het push-mechanisme herkenbaar (hulp actief aanbieden). Ook mengvormen komen voor, en soms zijn expliciete afspraken gemaakt over het inroepen van elkaars ondersteuning. Maar ook materiële ondersteuning is belangrijk: trainingsprogramma's, werkplekinstructies en POP's zijn de belangrijkste ingrediënten.

Onderzoeksvraag 3 Condities voor leren

Het onderzoek wijst ook uit dat een aantal meer algemene condities het leren binnen zelfsturende teams beïnvloeden. Zij vormen dan ook integraal onderdeel van de leerinfrastructuur. Er wordt onderscheid gemaakt tussen condities op vier niveaus: organisatie, team, werkplek en individu. In de literatuur en de groepsinterviews komen legio voorbeelden naar voren van condities op elk van deze niveaus die het leren mogelijk beïnvloeden. In de case studies bleek het soort en de aard van de invloed van de condities (positief of negatief) per team te verschillen. In zijn algemeenheid lijken op organisatieniveau vooral de rol van het topmanagement en de organisatiecultuur een rol te spelen, op teamniveau zijn de rol van de teamleider en de samenstelling en grootte van het team belangrijk. Op werkplekniveau spelen condities als afwisseling, autonomie en werkdruk een voorname rol, en op individueel niveau tenslotte vooral een motivatie of 'drive' voor leren, en het vermogen om ondersteuning voor leeractiviteiten te verwerven.

Aanbevelingen

Op basis van het onderzoek kunnen verschillende aanbevelingen worden gedaan voor de praktijk. Zo kan het model dat in dit onderzoek is ontwikkeld benut worden om de leerinfrastructuur van een bepaald team in kaart te brengen. Inzicht in belangrijke elementen van de leerinfrastructuur is een belangrijke voorwaarde om die te bewaken en eventueel uit te bouwen. Het model van de leerinfrastructuur biedt bewust zowel aandacht aan formele als aan informele leeractiviteiten. Het integraal analyseren van beide vormen van leren biedt waarschijnlijk ook aanknopingspunten voor het creëren van verbindingen tussen die twee.

Ook voor verder *onderzoek* levert dit onderzoek aanknopingspunten op. Met name valt te denken aan het verder verkennen van de aard van de leerinfrastructuur van zelfsturende teams; het ontwikkelen van een typologie van leerinfrastructuren; en gericht onderzoek naar manieren om een bestaande leerinfrastructuur te verbeteren.

Appendix I

Self-managing work teams

I.a Overview of definitions

In total, 40 definitions were analysed.

Table I.1 Overview of terms

Term (Dutch / English)	*# of times*
1. Zelfsturend team / self-managing work team, self-directed work team	23
2. (Semi) autonome groep / (semi/quasi) autonomous (work) group	6
3. Taakgroep	3
4. Team	3
5. Zelfsturende werkgroep / self-managing group	2
6. Zelfstandige productie-eenheid	1
7. Groepswerk	1
8. Empowered team	1

Table I.2 Elements of the definition of self-managing work teams, and definitions in which they were mentioned

A = More or less permanent group
B = Shared responsibility
C = All interdependent tasks and activities, necessary to deliver a product or service
D = To an internal or external customer
E = (To a certain degree) responsible for managing itself and its task
F = Clear common purpose
G = Possesses relevant information and/or resources and/or competences and/or authority

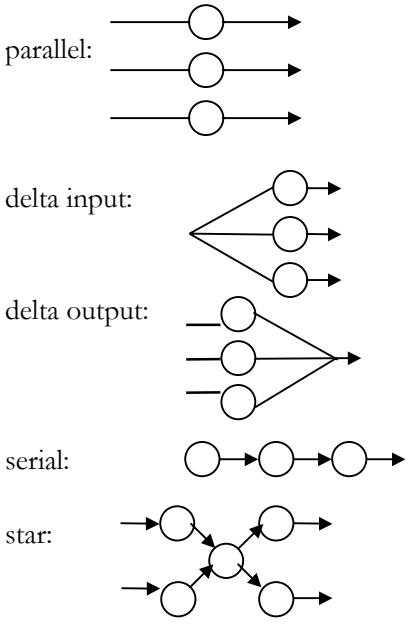
(table on next page)

	A	B	C	D	E	F	G
1. Allegro (1972)			●		●		
2. Banker, Field, Schroeder, Sinha (1996)			●		●		
3. Boonstra (1997)				●	●		
4. Carroll (1996)		●	●		●		●
5. Cohen & Ledford (1994)			●		●		●
6. De Leede & Stoker (1996)					●		
7. De Sitter (1994)			●		●		
8. Dunphy & Bryant (1996)		●			●		
9. Emery in Pasmore (1995)							●
10. Fisher (1993)					●		
11. Foster, Heling, Tideman (1995)		●			●	●	●
12. Fousert (1996)					●		
13. Goodman, Devadas,Griffith, Hughson (1990)			●		●		●
14. Guzzo & Dickson (1996)					●		
15. Hicks & Bone (In Foster et al.)			●		●		
16. Hitchcock & Willard (1995)	●	●	●		●	●	
17. Joosse et al. (1990)			●		●		
18. Katzenbach & Smith (1993)		●				●	●
19. Kuipers & Van Amelsvoort (1990)	●		●		●		●
20. Kulisch & Banner (1993)			●		●		
21. Lawler, Mohrman, Ledfod (1995)		●	●		●		
22. Liebowitz & Holden (1995)	●				●		
23. Luer & Palleschi (1994)		●	●		●		●
24. Orsburn, Moran, Musselwhite & Zenger (1990)		●	●		●		●
25. Pasmore & Mlot (1994)	●		●		●		●
26. Peeters & Van der Geest (1996)	●	●	●		●	●	●
27. Peeters (1995)		●			●		
28. Ray & Bronstein (1995)		●			●	●	●
29. Scheltens & De Jong (1996)						●	
30. Scholtes (1996)	●	●				●	
31. Stewart & Manz (1995)	●	●			●		
32. Trist (1981)							
33. Van Amelsvoort & Scholtes (1994)	●	●	●	●	●		
34. Van Hooft, de Nijs & Poutsma (1997)		●	●		●	●	
35. Vaverek (1987)					●		●
36. Vink, Brinkmann, Siero, Boonstra & Maas (1996)		●	●		●		●
37. Vlaming (1995)		●			●	●	
38. Wall, Kemp, Jackson, Clegg (1986)		●			●		●
39. Wellins & George (1991)			●		●		
40. Wellins,Byham, Wilson (1991)	●	●	●	●	●		

I.b Design principles for self-managing work teams

1. *The team task has to be complete, have clearly identifiable borders, and it has to be possible to link the team task to a measurable result. The team task is a comprehensive set of interdependent activities.*

For a self-managing team, horizontal autonomy needs to be as large as possible (Emans et al., 1996; Kuipers & Van Amelsvoort, 1990). The team has to have responsibility for enough of a product or service to ensure a clear input and clear output for which it can be held responsible (Lawler, 1986). The amount of horizontal autonomy is limited in the case of pooled interdependence (when several teams or departments depend on the same resources) and/or serial interdependence, when the work flow (making of a product or the delivery of a service) consists of an considerable amount of serial steps so that they have to be divided over several teams, and the output of one team forms the input for the next team (Molleman & Van der Zwaan, 1994). De Sitter distinguishes between several possible external interdependencies of the team task:



It becomes clear from these graphical representations that parallel flows provide the largest amount of horizontal autonomy for the teams. In the case of input / output / serial or star-like interdependencies, the horizontal autonomy of the team is smaller. Therefore, STSD recommends a parallel interdependence of the teams, in order to optimise the independence of the teams (De Sitter, 1994; De Sitter et al., 1997).

The task should lead to a visible and measurable result, this makes it possible to use standardization of output as a coordination mechanism, and enables monitoring and reward of team performance (Kuipers & Van Amelsvoort, 1990; Van Amelsvoort & Scholtes, 1996). It also increases the task identity. Research by Campion & Higgins (1993) and Emans et al. (1996) has indicated that task identity is one of the characteristics of effective groups. Emans et al. (1996) distinguish between perceptual and objective identity. Both are important since they support the first design principle, and underline the identity and independence of the team. The team forms a clearly identifiable unit to its environment, which enables the team members to identify with the team, which stimulates them to contribute to the team performance (Kuipers & Van Amelsvoort, 1990).

2. *The team has to have the required capacity for control and authority to be able to fulfil the team task as autonomously as possible*

In order to be able to operate autonomously, the team has to be able to control and coordinate its own work (Kuipers & Van Amelsvoort, 1990). The basic characteristic of a self managing work team is that it fulfils a 'complete' task: executing, regulating, coordinating, evaluating, analyzing and improving tasks related to produce a clearly identifiable product or part of a work process (De Sitter, 1994; Van Amelsvoort & Scholtes, 1994). The following management functions have to be integrated in the team:

- planning the work process;
- making adjustments in the work process;
- solving disturbances in the work process;
- monitoring, maintaining and improving team performance (Van Amelsvoort & Scholtes, 1994).

The team has to be able to make decisions with regard to these functions itself, and/or be able to influence decisions with regard to these functions taken outside the team (by management) (De Sitter, 1994). (For instance, teams usually do not set their own performance goals autonomously, but they should be able to influence management decisions in this regard, by participating in the goal-setting process).

This integration of managerial and transformational tasks ('thinking' and 'doing') is one of the most essential principles when it comes to creating self-managing work teams. It enables the team to deal with variance and disturbances in the work process itself, and empowers the team to improve and renew the work process. Because it represents a fundamental break with the Scientific Management principle of separation of regulation and transformation, it has far-reaching consequences for line management and staff departments. In the traditional model of organizations, these organizational members perform the managerial or control tasks. In the new situation, managers and staff members have to focus on enabling teams to perform control and coordination tasks themselves, for instance by providing them with feedback on performance, expert advice and management information. Ultimately, applying this principle leads to a flattening of the organizational structure, because less supervisors are needed and to a reduction of the staff departments. Some of the staff members are integrated in the teams (e.g. Kuipers & Van Amelsvoort, 1990; Van Amelsvoort & Scholtes, 1996; Sips & Keune, 1996).

Important to note is that in reality, organizations do not always choose to delegate all of the regulative tasks to the teams. Regulation of the work process has many aspects, such as: machines and resources, quality, maintenance, work preparation, improvements, finance, safety, milieu, work conditions, personnel, process control, organization of work, training, logistics (Kuipers & Van Amelsvoort, 1990). There probably is no team which is completely self-managing with regard to all of these aspects. For each regulatory task, organizations can decide how much influence the team will become over this task.

Four levels of team autonomy can be distinguished:

1. the team performs the task autonomously
2. the team makes a decision in participation with management
3. the team gives advice to management
4. the team has no influence at all with regard to the task.

Dutch research reveals that team decision making authority often seems to be limited to those tasks that are related to the internal functioning of the team, such as safety, tidiness of the workplace, quality control, routine maintenance, division of work and planning of work schedules, and

measuring and judging team productivity and product quality. Matching customer demands and production facilities, as well as management of budgets and resources and selection of new team members often fall beyond team responsibilities. Management takes decisions in these fields, teams are - at most - able to give advice with regard to these matters (De Leede & Stoker, 1996; Peeters & Koppens, 1997). (As such it is not surprising that improved product quality is one of the most important benefits of working in self-managing work teams, conclude Peeters & Koppens (1997)).

So, whereas Dunphy & Bryant (1996) conclude that there are two basic forms for self managing work teams, namely:

- the supervisor-centered team - a team where there is still centralized decision making by the supervisor/team leader, but where group members are encouraged to participate significantly in the decision making process
- the self-managing team - a team where normal supervisory and/or managerial functions are delegated to the team, and decisions are taken by the group as a whole, or by members given responsibility to do so by the team.

It seems that in practice, teams are often a mixture of these two models.

3. Team members tasks have to be interdependent; activities of individual team members complementary.

The tasks of the team have to form an *integrated* task domain, meaning that the relations between the tasks *within* the domain should be stronger than the interdependence with the tasks which fall *outside* the domain. There should be no relations of individual tasks within the team with tasks and work places outside the team, only relations of the team task and other tasks are allowed (De Sitter, 1994). It is important that team members are dependent on each other, to fulfil the team task, to stimulate their working together as a team. Otherwise the team will not be anything more than a collection of individual employees (Van Amelsvoort & Scholtes, 1994, 1996). This interdependence should be a direct result of the physical structure of the work process: the team task has to be composed of a set of interdependent and complementary tasks which together form an inseparable whole (Kuipers & Van Amelsvoort, 1990; Sips & Keunen, 1996). De Sitter (1994) advises against parallel or serial interdependence of the tasks within the team and recommends reciprocal interdependence, the most strong of all interdependencies.

Important, note Emans et al. (1996), is that the task interdependence is positive: that is: team members need each other to fulfil the group task, and if one member succeeds in fulfilling his or her team task, others benefit as a result. In some cases the reverse is true. Emans et al., provide the example of a team in which one member has the special task to review new computer systems for usability. If he succeeds, and finds a new computer system or new software, this means the other group members will have to spend time learning to use this new system. They experience this as a hindrance (in the short run) for the fulfilment of their own tasks; in other words there is a (perceived) negative interdependence between his tasks and the tasks of the other team members. As this is the case, they do not support the employee with his special task. One way to stimulate positive interdependence is to implement a reward system based on team-performance instead of individual performance, though it is important to also have individual accountability (Emans et al., 1996).

Essential for success of a self-managing work team is an atmosphere of positive cooperation, which requires communication, team members who help each other, negotiate on solutions for occurring problems etc. The physical work environment should therefore enable frequent communication (low noise, conference room etc.) (Kuipers & Van Amelsvoort, 1990).

Interesting to note is that research by Campion & Higgins (1993) pointed out that next to task interdependence, *goal* interdependence and interdependent *feedback and rewards* are also characteristic for effective work teams.

4. *The team size should be such that the team can make a clear contribution to the organization, and direct mutual adjustment and face-to-face interaction (direct personal contact) are possible.*

The team should neither be too large nor too small. Because the optimal team size is related to the team task, the term 'relative size' is often used to express that there is not one correct size (see e.g. Lawler, 1986). An adequate relative size is one of the characteristics of effective work groups (Campion & Higgins, 1993). Research in the field of group dynamics has shown that a group of 7-12 members is optimal with regard to aspects as speed and quality of group problem solving, participation of team members, cohesiveness and individual and group productivity. Four members provides a minimum (groups smaller than that are too unstable), whereas 20 seems to be a maximum (larger groups fall apart into subgroups) (e.g. Lawler, 1986; Katzenbach & Smith, 1993; Kuipers & Van Amelsvoort, 1990; Van Amelsvoort & Scholtes, 1994, 1996). De Leede & Stoker (1996) report that a team size of ten is quite common.
Van Amelsvoort & Scholtes (1994, p. 29) provide the following analysis of the relationship between several important performance aspects and team size:

Team size →	**<4**	**4-6**	**7-12**	**13-20**	**>20**
Performance aspects ↓					
• Problem solving	--	-	+	++	--
• Decision making speed	+	++	+	-	--
• Participation of team members	++	+	+	-	--
• Cohesiveness	+	++	+	-	--
• Consensus	-	-	+	++	-
• Flexibility	+	++	+	-	--
• Individual productivity	-	-	+	-	--
• Team productivity	-	-	+	++	-

Whereas teams with 7-12 members perform better in general, the optimal team size is situation-dependent, and is determined by factors such as complexity of the process, variation in the process and technological possibilities. In complex processes with high amount of variety, small groups (6-8 members) perform better, whereas larger groups (14-18 members) are appropriate for processes with little variation and/or low complexity (Van Amelsvoort & Scholtes, 1994, 1996). All in all, it can be stated that the team should be small enough to foster a good quality of team decision making, and enable every team member to have insight into the decisions which are made. On the other hand, the team should be large enough to be able to:
- execute a complete process part/ deliver an identifiable product;
- address a variety of personal skills;
- reach identifiable and relevant goals for the organization.

Though size is important it is but one of the aspects of team composition. Research by Campion & Higgins (1993) indicates that other facets of group composition are also important:
- heterogeneity;
- flexibility;
- preference for group work.

The first two can be regarded as related closely to the principle of requisite variety and redundancy of functions. The third, team members who have a preference for group work, refers to the attitude of the team members.

5. *Team members can fulfil several tasks within the team (multiskill)), the reward system should reflect this; differences in status between team members should not hinder a flexible work planning or mobility of members within the team*

In concurrence with the principle of minimum critical specification, a self-managing work team does not work with clearly delineated functions. Instead, team members fulfil ever changing clusters of tasks. This enhances team flexibility and thus increases the possibilities of the team to react to changing circumstances, such as disturbances of the work flow and variance in input or desired output (De Sitter, 1994; see also McGill & Slocum, 1993). In order to be able to execute changing clusters of tasks, members should be *multiskilled*: able to fulfil a range of operational, monitoring, coordinating and control tasks. An effective team posesses a certain amount of multifunctionality (heterogeneity) with regard to both the primary process, the secondary processes (such as the interaction among team members, but also the support activities such as quality management) and external functions. The latter, which we could call boundary management, has not received much attention yet, in the form of research, though the attention has been growing in recent years (Emans et al., 1996; Sips & Keunen, 1996). Though multifunctionality is necessary to enable the team to perform a complex and multifaceted tasks, it affects the cooperation and cohesiveness of the team negatively. Therefore it is necessary to implement cooperation-enhancing factors (Emans et al, 1996). One of the most important mechanisms in this respect is multiskilling (or redundancy of functions), since this prevents the team from becoming a group of specialists.

It is very important that the portfolio of competencies is reflected in the career perspective of each member, just as the reward and status should be linked to this skill portfolio (Van Amelsvoort & Kuipers, 1990).

Though heterogeneity within the team is very important to ensure the team's capacity for self-management, the differences between team members should not be so large that they hinder an efficient division of work, or inhibit internal mobility of team members. If the gap between team members is too large, the possibilities for self-management are limited. Every team member should possess a basic level of knowledge and skills, so he or she can develop into an all-round team member in a number of years, if that is desirable (Kuipers & Van Amelsvoort, 1990; Van Amelsvoort & Scholtes, 1994). To use multiple skills of team members, a system of job rotation can be employed, whereby team members rotate among different operational tasks. Though this improves flexibility of the team, the effect on quality of work is only very small. Combining both regulatory and operational tasks in separate functions has a greater impact on the quality of work. Both measures are often employed in self-managing work teams, and used to develop a new job structure. An example of a job classification system with several levels (from apprentice to all-round team member or team coordinator) is one where employees enrich their functions with new tasks (operational and regulatory):

Tasks / Members	1 (*op.*)	2 (*reg.*)	3 (*op.*)	4 (*reg.*)	5 (*op.*)	6 (*reg.*)	7 (*op.*)	8 (*reg.*)
A	●							
B	●	●	●					
C	●	●	●	●				
D	●	●	●	●	●	●		
E	●	●	●	●	●	●	●	●

Another system is one in which employees determine their own mix of primary and secondary tasks (which they fulfil when the 'first' team member is absent):

Tasks / Members	1 (*op.*)	2 (*reg.*)	3 (*op.*)	4 (*reg.*)	5 (*op.*)	6 (*reg.*)	7 (*op.*)	8 (*reg.*)
A	●		●				○	○
B	○		○		●			
C		○		●			●	
D				○		○		●
E		●			○	●		

● = *primary task*
○ = *secondary task*

Regardless of the job structure, two conditions are important. First, capacities of team member should fit the structure. And secondly, the task structure should match the development possibilities and wishes of the team members, and as such reflect and leave room for differences in aptitudes and ambitions of individual team members (Kuipers & Van Amelsvoort, 1990). Once a job classification system is set up, the reward system can be designed (Van Amelsvoort & Scholtes, 1994).

6. Every team needs a coordinator; the person who fulfils this role is a key figure for team members as well as the team environment

In every self-managing work team there are tasks related to internal coordination and maintaining external relationships. The team coordinator sees to it that these tasks are adequately fulfilled. The coordinator's tasks include:

- Management of the internal coordination between team members,
- Organizing and managing the decision making process,
- Forcing decisions in cases of disagreement,
- Relating team goals to organizational objectives,
- Maintaining relationships with the team environment,
- Looking after internal discipline, motivation and development of the learning ability of team members.

The role of coordinator can rotate among different team members, in much the same way as technical skills are rotated in multiskilling. Some of the advantages of this rotation system include

an enhanced overview of the team task by more team members, a better understanding for leadership decisions by the team members, increased flexibility of the team, the possibility for team coordinators to learn from each other. On the downside a rotation system demands, among other things, an extended period of implementation, and very clear agreements in order to maintain a clear line in group decision making (De Sitter, 1994; Dunphy & Bryant, 1996; Kuipers & Van Amelsvoort, 1990).

Ideally the team coordinator has no leadership responsibilities, he is not the boss but a 'primus inter pares'. Essential for a self-managing team is the absence of internal hierarchy (De Sitter, 1994). In practice, however, this hierarchy is hardly ever completely absent (De Leede & Stoker, 1996).

Team leadership is a very complex task with several different aspects. For an effective team, management of team culture, structure and relationships with the team environment are especially important leadership aspects (Emans et al., 1996). These leadership tasks are in many cases managed by several team members, thus the role of team coordinator is shared. This enables the team members to take care of these leadership tasks with which their affinity is greatest (e.g. a team member with well-developed social skills can take care of team relationships, while another can occupy himself with designing an optimal team structure) (Emans et al., 1996).

Tasks of the team coordinator were previously fulfilled by management. With the role change, the task of the manager (outside the team) changes from direct supervision to establishing a supportive environment for teams, for instance by (Emans et al., 1996):

- Assisting teams in the case of conflicts that run out of hand;
- Encouraging cooperation;
- Providing for facilities;
- Inspiring and setting out the strategic course / vision.

In short management coordinates the work of the teams by output control (on the basis of minimum critical specification) and assists teams in realizing the desired output (Emans et al. 1996; Molleman & Van der Zwaan, 1994).

Appendix II

Background information group interviews

II.a Overview participants' organisations and job titles

Participant	*Organisation*	*Primary process*	*Job type*
1.	Arends & Samhoud	Consultancy	Business consultant
2.	Associatie voor Coaching	Training	Trainer / coach
3.	Delta Lloyd Verzekeringsgroep n.v.	Insurance	HR staff
4.	Europe Combined Terminals (ECT)	Container terminal	Line manager
5.	Heineken Nederland b.v.	Beer brewery	HRD staff
6.	Hoogovens Packaging Steel	Steel manufacturing	Line manager
7.	Hoogovens Packaging Steel	Steel manufacturing	
8.	IHC Holland, Parts & Services	Production and service for dredgers	HRD staff / project consultant
9.	IHC Parts & Services	Production and service for dredgers	Line manager
10.	ING Nederland	Financial services / banking	HRD staff
11.	Katholieke Universiteit Nijmegen	Research	Researcher
12.	Kessels & Smit	Consultancy	Researcher /consultant
13.	Koers Organisatie-advies	Consultancy	Business consultant
14.	KU Nijmegen	University	Researcher
15.	Marlou Elsen coaching & training	Training	Trainer/coach
16.	Nijenrode Centre for Organisational learning & Change	Research	Researcher / consultant
17.	Philip Morris Holland b.v.	Sigarette manufacturer	HR staff
18.	Philip Morris Holland b.v.	Sigarette manufacturer	Training staff
19.	Philips Semiconductors b.v.	Semiconductors manufacturing	HRD staff

Participant	*Organisation*	*Primary process*	*Job type*
20.	Philips Semiconductors b.v.	Semiconductors manufacturing	HR staff
21.	PTT Post	Postal services	Line manager
22.	PTT Post	Postal services	Line manager
23.	Sant organisatie-adviseurs	Consultancy	Business consultant
24.	Sant organisatie-adviseurs	Consultancy	Business consultant
25.	SCO Kohnstamm instituut	Research	Researcher
26.	ST Groep	Consultancy	Business consultant
27.	Twente University / Kessels & Smit	University / consultancy	Researcher / consultant
28.	UB / Verkade	Food production	HRD staff
29.	Universiteit Twente	University	Researcher
30.	Universiteit Twente	Bedrijfskunde (Technologie & Management)	Researcher
31.	Urenco Nederland	Uranium plant	Business consultant
32.	Xerox Nederland b.v.	Service organisation copiers and printers	Line manager
33 – 36	Anonymous		

II.b Invitation letter, including preparatory questions **(translated from Dutch)**

Dear [Name],

On [date], the [number] group interview within our study into 'supporting learning within self-managing work teams' will take place. I am very happy that you agreed to attend this meeting. This letter provides you with some background information on the programme and the location, and contains some preparatory questions.

Information
The meeting will take place in [Place]. The attached information packaged contains information on the location, participants and the programme.

Preparation
Preparation by all participants will allow for a smooth start of the group interview, and will help to maximize results. The question central to the meeting is: What are effective ways to support learning within self-managing work teams? In preparation, I would like to ask you to look back and reflect on <u>situations</u> (from your own immediate work environment or from others) in which learning within a self-managing work team was facilitated or supported, in one way or another.
In the envelope, you will find <u>yellow</u> cards on which you can write down these practical experiences. Use one card for each situation, or incident. And please write down the following information:

1. Situation (an event or an activity): what happened?
   For example: installation of an Open Learning Centre; arrival of new team leader who was very good at coaching; a workshop on feedback….
2. Consequences: what was the (intended or unintended) positive effect on learning within the team?

For example: team members became aware of their own learning needs; quality of feedback within the team improved, and consequentially people supported each others' learning process more effectively; motivation for learning increased ….

Next to your personal experiences, it is also allowed to write down experiences from others: actual situations you heard about, read about or encountered during research projects.

In addition to practical experiences, many people also have more general, theoretical notions on what is important in supporting learning within teams. We are also interested in such input. But for the project, it is important to separate practical experience from theoretical notions. Therefore, a different colour cards is available to write these down. The envelope contains green cards for theoretical input. Use one card for each principle. And please write down:

1. The (theoretical, general) notion or principle for supporting learning within teams
   For example: teams need information on their own performance in order to be able to learn; the team leader's role is crucial in supporting team members in learning; members of teams with a clear, common goal are better at learning than people in teams without such a focus.....
2. Consequences: in what way does this principle serve to promote learning within a team?
   For example: increased awareness with team members regarding their learning needs, support from the team leader in learning.....

Of course, it is not possible to be complete in writing down your experience and knowledge. This is also not necessary. You do not have to use all of the cards attached to this letter. It is however, important to write down your most important experiences. This will take approximately 20 minutes of your time. During the group meeting, there will be ample opportunity to sharpen and add to your ideas, based on experiences and ideas from other participants.

Personal background

In order to make a participants profile, I have added a brief checklist with some questions regarding your work and experience with self-managing work teams. Would you be so kind as to fill out this checklist, and bring it along to the meeting? Thanks!

Questions?

Should you have any questions or requests for information before the actual meeting, you can always contact me by phone, fax or e-mail. My address is listed at the top of this letter.

I look forward to meeting you on [date].

Best regards,
Saskia Tjepkema

II.c Agenda for each meeting (translated from Dutch)

Meeting # 1

Time	Topics and activities
10.00 – 10.15	**Start** • Objective and programme • Personal introductions
10.15 – 10.45	**Background of the study**
10.45 – 11.45	**Effective ways to support learning within self-managing work teams** *Exchanging experiences in small groups* • Discussing the note cards • Including additional experiences • Clustering experiences
11.45 – 12.30	*Plenary discussion* • Exchanging results from discussions in small groups • Including additional experiences and principles
13.30 – 14.15	*Plenary reflection on the results*
14.15 – 15.30	**People involved in supporting learning within self-managing work teams** *Discussion in small groups*
15.45 – 16.30	*Plenary discussion* • Exchanging results from discussions in small groups • Reflection and conclusions
16.30 – 17.00	**Conclusions**

Meeting # 2

Time	Topics and activities
10.00 – 10.15	**Start** • Objective and programme • Personal introductions
10.15 – 10.45	**Background of the study**
10.45 – 11.45	**Effective ways to support learning within self-managing work teams** *Exchanging experiences in small groups* • Discussing the note cards • Including additional experiences • Clustering experiences
11.45 – 12.30	*Plenary discussion* • Exchanging results from discussions in small groups • Including additional experiences and principles
13.30 – 14.30	*Plenary reflection on the results*
14.30 – 15.30	**Effectiveness of 'support structure' for learning** *Discussion in small groups*
15.45 – 16.45	*Plenary discussion* • Exchanging results from discussions in small groups • Reflection and conclusions
16.45 – 17.00	**Conclusions**

Meeting # 3

Time	Topics and activities
10.00 – 10.15	**Start** • Objective and programme • Personal introductions
10.15 – 10.45	**Background of the study**
10.45 – 11.45	**Effective ways to support learning within self-managing work teams** *Exchanging experiences in small groups* • Discussing the note cards • Including additional experiences • Clustering experiences
11.45 – 12.30	*Plenary discussion* • Exchanging results from discussions in small groups • Including additional experiences and principles
13.30 – 14.15	*Plenary reflection on the results*
15.30 – 16.30	**Indicators for successful support:** How to determine whether support for learning within a team is sufficient, or whether a team needs support in supporting learning? • *Discussion in small groups* • *Plenary discussion*
16.30 – 17.00	**Conclusions**

Appendix III

Background information case studies

Appendix III.a Data collection plan

Topics:	*Top level manager*	*Team leader*	*Team members*	*HRD staff*
Learning				
Types of competencies necessary for work	I	I	I, Q	I
Learning activities				
• Identifying learning needs		I	I, Q, L	I
• Creating & using learning opportunities		I	I, Q, L	I
• Assessing learning outcomes		I	I, Q, L	I
• Managing learning		I	I, Q, L	I
Conditions for learning				
Conditions on the organisational level				
• Top management's vision and behaviour	I	I	I, Q	I
• Room for self-management in organisation	I	I	I	I
Conditions on the team level				
• Team composition and size	I	I	I, Q	I
• Reward structure team	I	I	I	I
• Team leadership	I	I	I, Q	I
Conditions on the workplace level				
• Latitude		I	I, Q	I
• Variety		I	I, Q	I
Conditions on the individual level				
• Competencies (a.o. learning skills)		I	I	I
• Motivation for learning		I	I	I
Support for learning				
Learning interventions		I	I, Q, L	I
Learning activities / training		I	I, Q, L	I
Social support		I	I, Q, L	I
Material support		I	I, Q, L	I

I = Interview, Q = Questionnaire, L = Learning log

III.b Checklist for selection interviews (translated from Dutch originals)

Before selecting case study teams, a selection interview was conducted, using to the following checklist.

Background information organisation

1. Organisation: name, size, type, branch, age
2. Primary process
3. Employee characteristics (educational level, types of jobs,…)
4. Organisational philosophy
5. Strategic goals
6. Structure: teams (size, number,….), management, staff departments.
7. HRD function

Background information team

1. Name, size
2. Primary process / team task
3. Team member characteristics (educational background, types of work,….)
4. Team goals

Self-managing work team? (collecting information for selection purposes)

Background: a self-managing work team was defined as:

- A permanent group of employees who work together on a daily basis, who, as a team, share the responsibility for all interdependent activities necessary to deliver a well-defined product or service to an internal or external customer.
- The team is, to a certain degree, responsible for managing itself and the tasks it performs, on the basis of a clear common purpose.
- In order to do so, the team has access to relevant information, possesses relevant competences and other resources, and has the authority to independently make decisions with regard to the work process (e.g. solving problems, optimising).

Questions

1. Is the team a more or less permanent work group?
2. Do team members work together on a daily basis?
3. Do team members collectively carry responsibility for a number of interrelated activities, necessary to deliver a clearly delineated product or service?
4. Do team members provide services or deliver products to internal and/or external clients?
5. Is the team responsible for managing itself – to a certain degree? To what degree is the team responsible (what tasks do team members perform, and what tasks are performed by the team leader or higher management levels)? Have concrete arrangements been made regarding this level of responsibility?
6. Does the team have a clear, common goal? What is this goal?
7. Does the team possess necessary (human) resources and information?
8. Does the team have the authority to take decisions with regard to the day-to-day work process (e.g. solving problems, optimizing processes)?

III.c Interview checklists (translated from Dutch originals)

The following sets of questions were used as a *checklist* / *topic list* (see also description of interview technique in chapter 3).

III.c.1 Top level manager

1. Introduction

- Explanation of purpose and design of the study and the interview
- Procedure: taping the interview, sending the interview report for approval

2. Conditions

Top management's vision

1. What, to you, is 'self-management', and 'a self-managing work team'?
   - (In how far) Is this a personal vision, or is it shared widely?
   - (In how far) Is this vision known in the organisation? (In how far) is it documented in written statements?
2. Why does your company choose to work with self-managing work teams?
   - (In how far) Is this a personal vision, or is it shared widely?
   - (In how far) Is this vision known in the organisation? (In how far) is it documented in written statements?
3. How do you perceive the relationship between 'learning' and 'self-managing work teams'? What do you expect from teams in this respect?
   - (In how far) Is this a personal vision, or is it shared widely?
   - (In how far) Is this vision known in the organisation? Are teams aware of your vision? How did they become aware of it? (In how far) is the vision documented in written statements?

Top management's behaviour

1. How do you personally try to support and promote self-management?
   - (In how far) do you succeed / do you find this difficult?
   - (In how far) do other managers show the same behaviour?
2. How do you personally try to support and promote learning within the teams?
   - (In how far) do you succeed / do you find this difficult?
   - (In how far) do other managers show the same behaviour?
3. Do you think your behaviour in this respect influences learning within the teams? How? (positive effect, no effect, negative effect)

Organisational design

1. (In how far) is the organisation (re)arranged to provide an appropriate and supportive context for self-managing work teams?
   - 'Hard' features:
     Structure
     Strategy
     Information systems
     HRM - systems, e.g. reward systems, recruitment procedures

- 'Soft' features
  Management (role, activities, style)
  Culture
  Competences

2. How do you judge the organisational context:
   - Does the context provide a good environment for self-managing work teams, or do you want to make improvements?
   - If improvements are considered necessary: which ones and why?

Reward system

1. What does the reward systemfor teams look like?
2. (In how far) does the reward system fit the self-managing work team concept?
3. (In how far) does the reward system influence learning within the teams?

Team composition

1. What is the average team size?
   - Does the size appear to influence learning within the team?
   - If so: how? (positive, negative)
2. Is there great variety within teams? (and in what respect do team members vary)
   - Does the variety appear to influence learning within the team?
   - If so: how? (positive, negative)

Team leadership

1. How is the leadership function organized? (Team leader, or incorporated in team)
2. Do teams have clear goals?
   - Who sets these goals / is supposed to set these goals?
   - How do the goals affect learning activities within the team?
3. What / how much influence do teams have on the goal setting process?
   - How does this affect learning within the team?
4. To what degree, and in what way are teams supported in realizing team work plans?
   - Who provides support?
   - How does this affect learning within the team?
5. Do you think that – in general – the way in which the leadership function is organised, provides teams with enough *room* for self-management? Why (not)?
6. Do you think that – in general – the way in which the leadership function is organised, provides teams with enough *support* for self-management? Why (not)?
7. Do you think that – in general – the way in which the leadership function is organised, provides teams with enough *room* for learning? Why (not)?
8. Do you think that – in general – the way in which the leadership function is organised, provides teams with enough *support* for learning? Why (not)?

II.c.2 Team leader

1. Introduction

- Explanation of purpose and design of the study and the interview
- Procedure: taping the interview, sending the interview report for approval

2. Learning and support for learning

1. What types of knowledge, skills and attitudes are important for the members of your team to do their job well?
   → *From now on, we will refer to these as 'competences'*
   - Do team members differ much in this regard (do they need different competences)?
   - Do team members know what competences they need? How can you tell? How can they know (e.g. personal experience, job descriptions?)

2. Do you feel that, in general, team members are aware of any discrepancies between necessary competences, and available competences? *(this concerns both learning needs for the present job, as well as learning needs for the future)*
   - How can you tell?
   - Are team members supported in clarifying such learning needs? And/or do you have specific tools?
     - How and by whom are they supported?
     - (How) do you provide support in this respect?
     - Is this type of support effective?
   - Are there any factors that hinder team members in becoming aware of learning needs? What factors stimulate awareness?

3. Can you give an example of how your team members develop new competences?
   Repeat this question until three types of learning experiences are discussed:
   - Course / formal learning
   - Informal learning on-the-job: unintentional
   - Informal learning on-the-job: intentional

   For each type of learning situation:
   a. What do team members learn in such a situation? And (how) do they realize what they have learned? (*Social support? Instruments? Conditions?)*
   b. Do team members receive support in this type of learning situation? *Social support / tools) (e.g. team members, HRD manager, team leader, tools, manuals, course calendar, coordinator, development meetings, feedback, coaching….)*
      - (How) do you try to support this type of learning?
      - Do you generally consider the support to be effective?
   b. What factors inhibit or promote this type of learning?

4. Which of these types of learning do you consider most important? Why? (most frequent, most effective…)

5. Do team members tend to actively reflect on any learning outcomes….?

….after a course?
….as a result of an intentional work/learning experience?
….as a result of informal workplace learning?

   - How can you tell?
   - Do they receive support in evaluating learning results? And/or are tools available?
     - How/by whom? *(team members, coaches, tests, performance checklists, performance reviews, …..)*
     - (How) do you try to support evaluation / assessment?

  - Do you generally consider the support to be effective?
- What factors inhibit evaluation? Wat factors promote evaluation?

5. Is it common for team members to fulfil an active role with regard to their learning activities, and – more general – regarding their own development? *(For example because they fulfil an active role in determining learning needs, looking for courses, looking for leanring opportunities, etc.)*
   - How can you tell?
   - Are they supported in fulfilling an active role?
     - How / by whom / by what? (team members, coaches, personal budget, PDP's, course catalogue, development reviews,….)
     - (How) do you try to provide support in this respect?
     - Do you consider this support to be effective?
   - What factors promote an active role of team members with regard to their own learning? What factors inhibit such an active role?

6. Just now, we discussed a number of people and instruments that support team members in learning activities (*provide some examples*):
   - Do you think that this support actually contributes to learning processes of team members? Why (not)?
   - Do you think that this support eventually also contributes to performance of team members? Why (not)?
   - What type of support do you consider most important? Why?
   - Where do you lack support? What would you like to change or add?

7. Just as we can distinguish a leadership function, a logistic function and a financial function within a team, we can also distinguish a 'training' or 'learning function'. That is: all tasks related to supporting training and learning, the persons carrying out these tasks, and the arrangements that are made in this respect.
   Has your team made specific arrangements regarding this learning function? (E.g. division of tasks with regard to learning, responsibilities of different persons, roles…).
   - *If yes:*
     - What arrangements have been made?
     - Did your team receive support in making these arrangements?
   - *If no:* Do you know why not?

3. Conditions

General
Do you feel that, in general, team members are able to develop new competences, whenever this is necessary for their job performance or to foster their general development? If no: what are bottlenecks? Which factors inhibit learning?

Top management's vision
1. What – according to you – is top management's vision regarding 'self-management', and 'a self-managing work team'?
   - How did you become aware of top management's vision in this respect?
   - (In how far) Is this vision widely shared in the organisation? (In how far) is it documented in written statements?
2. Why does your company choose to work with self-managing work teams, according to you?

- (In how far) Is this vision widely shared in the organisation? (In how far) is it documented in written statements?

3. What – according to you – is top management's vision regarding the relationship between 'learning' and 'self-managing work teams'? What does top management expect from teams in this respect?
   - How did you become aware of top management's vision in this respect?

Top management's behaviour

1. How do top managers try to support and promote self-management? How do you know?
2. How do top managers try to support and promote learning within the teams? How do you know?
3. Do you think their behaviour in this respect influences learning within the teams? How? (positive effect, no effect, negative effect)

Organisational design

1. (In how far) is the organisation (re)arranged to provide an appropriate and supportive context for self-managing work teams?
   - 'Hard' features:
     Structure
     Strategy
     Information systems
     HRM - systems, e.g. reward systems, recruitment procedures
   - 'Soft' features
     Management (role, activities, style)
     Culture
     Competences
2. How do you judge the organisational context:
   - Does the context provide a good environment for self-managing work teams, or do you want to make improvements?
   - If improvements are considered necessary: which ones and why?

Reward system

1. What does the reward system for teams look like?
2. (In how far) does the reward system fit the self-managing work team concept?
3. (In how far) does the reward system influence learning within the teams?

Team composition

1. What is the average team size?
   - Does the size appear to influence learning within the team?
   - If so: how? (positive, negative)
2. Is there great variety within teams? (and in what respect do team members vary)
   - Does the variety appear to influence learning within the team?
   - If so: how? (positive, negative)

Team leadership

1. How is the 'leadership function' organized? (What does the team leader do / what is incorporated in team)
2. Does your team have clear goals?
   - Who sets these goals / is supposed to set these goals?

- How do the goals affect learning activities within the team?

3. What / how much influence do team members have on the goal setting process?
   - How does this affect learning within the team?
4. To what degree, and in what ways is your team supported in realising team work plans?
   - Who provides support?
   - How does this affect learning within the team?
5. Do you think that – in general – the way in which the leadership function is organised, provides your team with enough *room* for self-management? Why (not)?
6. Do you think that – in general – the way in which the leadership function is organised, provides your team with enough *support* for self-management? Why (not)?
7. Do you think that – in general – the way in which the leadership function is organised, provides your team with enough *room* for learning? Why (not)?
8. Do you think that – in general – the way in which the leadership function is organised, provides your team with enough *support* for learning? Why (not)?

Conclusion

1. What do you consider the most important condition, fostering learning within your team?
2. And what is the most inhibiting factor?

III.c.3 Team members

1. Introduction

- Explanation of purpose and design of the study and the interview
- Procedure: taping the interview, sending the interview report for approval

2. Learning and support for learning

1. Please describe your work within the team?
   - Operational activities
   - Regulatory activities
   - Any special team roles
2. What knowledge, skills and attitudes are important for you, to do your job well?
   ➨ *From now on, we will refer to these as 'competences'*
   - How do you know these competences are important? *(Personal experience, job descriptions,…)*
3. What are important ways for you to keep up or develop your competences?
4. Do you fulfil an active role with regard to your own learning processes and personal development? *(for example because you formulate your own learning needs, actively look for courses, actively try to develop yourself ongoingly,…)*
   - Do you receive support in fulfilling these activities?
     - How, and by whom? *(team members, teamleader, coaches, other people, tools,…)*
     - Is this support effective?
   - What factors stimulate you to take on an active role with regard to your own learning and development? What factors (sometimes) hinder you in this respect?

5. Can you provide an example of a recent personal learning experience?
   (Explain: what is learning experience) Repeat this question until three types of learning experiences are discussed:
   - Course / formal learning
   - Informal learning on-the-job: unintentional

- Informal learning on-the-job: intentional

a. Can you describe the situation?
   - *Intentional / unintentional*
   - *Formal / informal*

b. Did you receive support? (*Social support? Instruments? Conditions?)*
c. What did you learn? And how did you realize what you learned? (*Social support? Instruments? Conditions?)*
c. Why do you need these competences? How do they influence your work?
d. Did you know on beforehand that you needed these competences? If so: how did you know? (*Social support? Instruments? Conditions?)*

6. Which of these types of learning do you value most *(most frequent, most effective …)*

7. Just now, we discussed a number of people and instruments that support you in learning activities (*provide some examples*):
   - What type of support do you consider most important? Why?
   - Where do you lack support? What would you like to change or add?

8. Just as we can distinguish a leadership function, a logistic function and a financial function within a team, we can also distinguish a 'training' or 'learning function'. That is: all tasks related to supporting training and learning, the persons carrying out these tasks, and the arrangements that are made in this respect.
   Has your team made specific arrangements regarding this learning function? (E.g. division of tasks with regard to learning, responsibilities of different persons, roles…).
   - *If yes:*
     - What arrangements have been made?
     - Did your team receive support in making these arrangements?
   - *If no:* Do you know why not?

9. Overlooking all of the support that we discussed above regarding your active role with regard to learning, learning activities, and the organization of learning within the team:
   - What support do you consider to be most important? Why?
   - Where do you lack support? What would you like to change or add?

3. Conditions

Top management's vision

1. What – according to you – is top management's vision regarding 'self-management', and 'a self-managing work team'?
   - How did you become aware of top management's vision in this respect?
   - (In how far) Is this vision widely shared in the organisation? (In how far) is it documented in written statements?
2. Why does your company choose to work with self-managing work teams, according to you?
   - (In how far) Is this vision widely shared in the organisation? (In how far) is it documented in written statements?
3. What – according to you – is top management's vision regarding the relationship between 'learning' and 'self-managing work teams'? What does top management expect from teams in this respect?

- How did you become aware of top management's vision in this respect?

Top management's behaviour

1. How do top managers try to support and promote self-management? How do you know?
2. How do you personally try to support and promote learning within the teams? How do you know?
3. Do you think their behaviour in this respect influences learning within the teams? How? (positive effect, no effect, negative effect)

Organisational design

1. (In how far) is the organisation (re)arranged to provide an appropriate and supportive context for self-managing work teams?
   - 'Hard' features:

   Structure
   Strategy
   Information systems
   HRM - systems, e.g. reward systems, recruitment procedures
   - 'Soft' features

   Management (role, activities, style)
   Culture
   Competences
2. How do you judge the organisational context:
   - Does the context provide a good environment for your teams, or would you like to see improvements?
   - If improvements are considered necessary: which ones and why?

Reward system

1. What does the reward systemfor teams look like?
2. (In how far) does the reward system fit the self-managing work team concept?
3. (In how far) does the reward system influence learning within the teams?

Team composition

1. What is the size of your team?
   - Does the size appear to influence learning within the team?
   - If so: how? (positive, negative)
2. Is there great variety among team members? (and in what respect do team members vary)
   - Does the variety appear to influence learning within the team?
   - If so: how? (positive, negative)

Team leadership

1. How is the 'leadership function' organized? (What does the team leader do / what is incorporated in team)
2. Does your team have clear goals?
   - Who sets these goals / is supposed to set these goals?
   - How do the goals affect learning activities within the team?
3. What / how much influence do team members have on the goal setting process?
   - How does this affect learning within the team?
4. To what degree, and in what ways is your team supported in realising team work plans?
   - Who provides support?

- How does this affect learning within the team?

5. Do you think that – in general – the way in which the leadership function is organised, provides your team with enough *room* for self-management? Why (not)?
6. Do you think that – in general – the way in which the leadership function is organised, provides your team with enough *support* for self-management? Why (not)?
7. Do you think that – in general – the way in which the leadership function is organised, provides your team with enough *room* for learning? Why (not)?
8. Do you think that – in general – the way in which the leadership function is organised, provides your team with enough *support* for learning? Why (not)?

Conclusion

1. What do you consider the most important condition, fostering learning within your team?
2. And what is the most inhibiting factor?

III.c.4. HRD staff

1. Introduction

- Explanation of purpose and design of the study and the interview
- Procedure: taping the interview, sending the interview report for approval

2. General

- How is the HRD function organised?
- How does HRD staff view its own role?

3. Learning and support for learning

1. Do you feel that, in general, team members are aware of any discrepancies between necessary competences, and available competences? *(this concerns both learning needs for the present job, as well as learning needs for the future)*
   - How can you tell?
   - Are team members supported in clarifying such learning needs? And/or do you have specific tools?
     - How and by whom are they supported?
     - (How) do you provide support in this respect?
     - Is this type of support effective?
   - Are there any factors that hinder team members in becoming aware of learning needs? What factors stimulate awareness?

2. Can you give an example of how your team members develop new competences?
   Repeat this question until three types of learning experiences are discussed:
   - Course / formal learning
   - Informal learning on-the-job: unintentional
   - Informal learning on-the-job: intentional

   For each type of learning situation:

   e. What do team members learn in such a situation? And (how) do they realize what they have learned? (*Social support? Instruments? Conditions?)*

b. Do team members receive support in this type of learning situation? *Social support / tools) (e.g. team members, HRD manager, team leader, tools, manuals, course calendar, coordinator, development meetings, feedback, coaching….)*
   - (How) do you try to support this type of learning?
   - Do you generally consider the support to be effective?

f. What factors inhibit or promote this type of learning?

3. Which of these types of learning do you consider most important? Why? (most frequent, most effective…)

4. Do team members tend to actively reflect on any learning outcomes….?
….after a course?
….as a result of an intentional work/learning experience?
….as a result of informal workplace learning?

- How can you tell?
- Do they receive support in evaluating learning results? And/or are tools available?
  - How/by whom? *(team members, coaches, tests, performance checklists, performance reviews, …..)*
  - (How) do you try to support evaluation / assessment?
  - Do you generally consider the support to be effective?
- What factors inhibit evaluation? Wat factors promote evaluation?

5. Is it common for team members to fulfil an active role with regard to their learning activities, and – more general – regarding their own development? *(For example because they fulfil an active role in determining learning needs, looking for courses, looking for leanring opportunities, etc.)*
   - How can you tell?
   - Are they supported in fulfilling an active role?
     - How / by whom / by what? (team members, coaches, personal budget, PDP's, course catalogue, development reviews,….)
     - (How) do you try to provide support in this respect?
     - Do you consider this support to be effective?
   - What factors promote an active role of team members with regard to their own learning? What factors inhibit such an active role?

6. Just now, we discussed a number of people and instruments that support team members in learning activities (*provide some examples*):
   - Do you think that this support actually contributes to learning processes of team members? Why (not)?
   - What type of support do you consider most important? Why?
   - Where do you lack support? What would you like to change or add?

3. Conditions

General
Do you feel that, in general, team members are able to develop new competences, whenever this is necessary for their job performance or to foster their general development? If no: what are bottlenecks? Which factors inhibit learning?

Top management's vision

1. What – according to you – is top management's vision regarding 'self-management', and 'a self-managing work team'?
   - How did you become aware of top management's vision in this respect?
   - (In how far) Is this vision widely shared in the organisation? (In how far) is it documented in written statements?
2. Why does your company choose to work with self-managing work teams, according to you?
   - (In how far) Is this vision widely shared in the organisation? (In how far) is it documented in written statements?
3. What – according to you – is top management's vision regarding the relationship between 'learning' and 'self-managing work teams'? What does top management expect from teams in this respect?
   - How did you become aware of top management's vision in this respect?

Top management's behaviour

1. How do top managers try to support and promote self-management? How do you know?
2. How do you personally try to support and promote learning within the teams? How do you know?
3. Do you think their behaviour in this respect influences learning within the teams? How? (positive effect, no effect, negative effect)

Organisational design

1. (In how far) is the organisation (re)arranged to provide an appropriate and supportive context for self-managing work teams?
   - 'Hard' features:

   Structure
   Strategy
   Information systems
   HRM - systems, e.g. reward systems, recruitment procedures
   - 'Soft' features

   Management (role, activities, style)
   Culture
   Competences
2. How do you judge the organisational context:
   - Does the context provide a good environment for self-managing work teams, or do you want to make improvements?
   - If improvements are considered necessary: which ones and why?

Reward system

1. What does the reward systemfor teams look like?
2. (In how far) does the reward system fit the self-managing work team concept?
3. (In how far) does the reward system influence learning within the teams?

Team composition

1. What is the team size?
   - Does the size appear to influence learning within the team?
   - If so: how? (positive, negative)
2. Is there great variety among team members? (and in what respect do team members vary)
   - Does the variety appear to influence learning within the team?

- If so: how? (positive, negative)

Team leadership

1. How is the 'leadership function' organized? (What does the team leader do / what is incorporated in team)
2. Does your team have clear goals?
   - Who sets these goals / is supposed to set these goals?
   - How do the goals affect learning activities within the team?
3. What / how much influence do team members have on the goal setting process?
   - How does this affect learning within the team?
4. To what degree, and in what ways is your team supported in realising team work plans?
   - Who provides support?
   - How does this affect learning within the team?
5. Do you think that – in general – the way in which the leadership function is organised, provides the team with enough *room* for self-management? Why (not)?
6. Do you think that – in general – the way in which the leadership function is organised, provides the team with enough *support* for self-management? Why (not)?
7. Do you think that – in general – the way in which the leadership function is organised, provides the team with enough *room* for learning? Why (not)?
8. Do you think that – in general – the way in which the leadership function is organised, provides the team with enough *support* for learning? Why (not)?

Conclusion

1. What do you consider the most important condition, fostering learning within your team?
2. And what is the most inhibiting factor?

III.d Questionnaire **(translated from Dutch)**

Dear {team members},

As you probably know, I am currently making a case study description of your team, in the context of a study into learning within self-managing work teams.

In order to collect information on your team, I have already interviewed several team members, your team leader [name] and [name manager]. It is not possible to interview all team membersm but in order to acquire a complete picture, I would like to include everyone's input.

Therefore, I would like to put this questionnaire to you. Filling out the questions will take approximately 15-20 minutes of your time. I would kindly like to ask you to return the list by [date], either through email or regular mail.

The questions all relate to the ways in which you acquire and develop the competences that are important for your work, and the support you receive in this regard (for example in the form of training, or team members providing you with feedback, or development reviews with your team leader…).

All results will be incorporated anonymously in the case description. Naturally, you will be informed of the results.

Thank you very much for your cooperation. I look forward to your response.

Best regards
University of Twente,
Saskia Tjepkema

Personal data
Name:
Years of working experience:
Number of years working for [company name]:

Work and competences
1. What are your main tasks?
a.
b.
c.

2. What competences (knowledge, skills, attitudes) are most important for your work?
a.
b.
c.

Learning and development
3. What are the most important ways in which you keep those competences up-to-date and develop them further (in order of importance)?
(For example: training, work itself, other activities..)
a.
b.
c.

4. To what degree are you personally responsible for keeping your competences up-to-date and developing them further? (expressed as a percentage, between 0 and 100%)
Answer: _____ %

→ From now on, this questionnaire zooms in on learning and development
'Learning' is the development of new competences. By 'development'we mean your professional development as {job title} in the long run.

Support for learning and development
5. What people support you in learning and development? (for example by providing you with feedback, by sharing their knowledge, by giving instruction, by choosing courses, by identifying learning needs, by outlining a career path, etc…)

Please state which persons are important in this regard (starting with the most important persons)

- My team leader
- Other team members
- Colleagues outside the team
- People I know outside the organisation (professionally and privately)
- Top level managers
- Technical support staff
- HRD manager
- HRM manager
- Others, namely: _____

6. Are you satisfied with the (level and type of) support you receive in learning and development, or would you like to change things?
- I am satisfied, because: _____
- I would like to change: _____

7. What is your opinion of [company] and especially [team] as a learning environment? That is: an environment that facilitates and supports your learning and development.
- Good, the organisation / team offers ample opportunities and support for learning and development.
- Reasonable, the organisation / team offers just enough opportunities and support for learning and development.
- Not good, the organisation / team is not really a stimulating environment for learning

General factors influencing learning and development
8. What – to you – is the most important factor stimulating your learning and development?
Answer: _____

9. What factor (sometimes) hinders your learning and development processes?
Answer: _____

End of the questionnaire

Thank you very much for your participation

III.e Format Learning log

Purpose & procedure

The objective of this learning log is to track down important learning situations in your work. We are thankful for your cooperation. For obtaining a clear picture, we kindly request that you keep this log for three weeks, noting your important learning moments. Please reflect regularly on your working day, or the most recent days, and find out if there were any 'learning moments'.

What are 'learning moments'?

With the term 'learning moment', we refer to an event in which you acquire new competencies, that you need for your job. In our daily language we do not always refer to such processes as 'learning'. Instead, we sometimes speak of mastering something, picking up a new idea, refocusing our thoughts, getting 'the hang' of something…

Learning moments are very diverse in nature. They often occur in a course, but also during work. For example when working together with a colleague or a client, or by carrying out a task that you had never done before, by reading a book, or even by reflecting on things you read, heard, saw, or experienced.

Some learning moments were actually planned for. A course, for example, is often a planned moment for learning. But deliberately taking on a new task, with the intent to learn and grow, is also a planned learning moment. Other learning moments occur spontaneously, for example when you get unexpected feedback from a co-worker.

Filling out the log

The log has a page for each 'learning moment'. The top half of the page provides room to describe the moment:

1. What happened? (description of the situation)
2. What did you learn (description of new competences, insights,…)
3. How will this help you in your work? (description of result)

At the bottom of the page, there is room to outline the learning moment more specifically:

1. Who learned something? You, other team members or the team as a whole? *(more than one answer is possible)*
2. Where did the learning occur? During work, in a training setting, …
3. Was the learning moment expected / planned for, or did it occur spontaneously and unexpected?

Learning moment

Date:

Brief description	
What happened? (*description of the situation*) What did you learn (*description of new competences, insights,…)* How will this be of use to you in your work? (*description of result*)	
Characteristics of learning event	
Who learned something?	❍ Me ❍ Other team members ❍ The team in general
Where did the learning occur	❍ During work ❍ In a training
Was the learning planned for?	❍ Yes, it was intentional ❍ No, it was spontaneous

Appendix IV

Tables group interviews

This appendix contains tables, constructed during the analysis of interview findings. As such they are not completely 'raw' data, but already processed. The original integral interview reports are available separately, in Dutch.

Table IV.1 Interventions and conditions that support team members in learning (formal and informal)

	Mentioned in interview #		
Interventions / conditions	*1*	*2*	*3*
• Building a learning climate / creating a safe environment for learning (in general)	✓	✓	✓
• Creating opportunities ('room') for learning	✓		✓
• Maintaining a team composition that is favourable to learning (variety in skills, integrating specialist knowledge)	✓	✓	
• Stimulating reflection and providing feedback / helping the team to monitor its progress	✓	✓	✓
• Coaching	✓	✓	✓
• Stimulating mutual learning amongst team members	✓	✓	✓
• Implementing improvement teams		✓	✓
• Organising opportunities for formal learning	✓	✓	

Table IV.2 Interventions and conditions that can help team members in clarifying learning needs

	Mentioned in interview #		
Interventions / conditions	*1*	*2*	*3*
Creating awareness within the team of (external) demands on team performance	✓	✓	
Self-assessment of the team and setting team performance targets	✓	✓	✓
Making team work plans (incl. learning needs)	✓	✓	✓
Stimulating the formulation of long term learning needs	✓		
Paying attention to learning needs of individual team members	✓	✓	

Table IV.3 Interventions and conditions that can support team members in assessing learning outcomes

	Mentioned in interview #		
Interventions / conditions	*1*	*2*	*3*
Recognition of experience / informally acquired competence	✓		
Accepting differences in 'pace of growth': every team (member) has its own pace	✓		

Table IV.4 Interventions and conditions to support team members in managing their learning process

	Mentioned in interview #		
Interventions / conditions	*1*	*2*	*3*
Incorporating attention for learning in everyday management by team leader	✓	✓	
Rewarding learning, and supporting learning	✓		
Increasing awareness of team members on (conditions for) learning	✓	✓	
Organising leadership / support for learning	✓	✓	✓

*Table IV.5: D*ivision of main responsibilities with regard to learning, as proposed in group interview #1

Management	*Team members*	*HRD professionals*
Team leader: Creating a learning climate, creating room for, and supporting informal learning Supporting the organisation of planned learning activities. Top management: Setting and sharing vision on working and learning	Analysing work processes and working on suggestions for improvements Analysing personal learning needs	Providing advice and support to team and management. Organisation of supportive offer of training opportunities Responding to learning / training needs

Table IV.6: Important team leadership characteristics in learning

Team leader activities	*Mentioned in interview #* 1	2	3
1. Setting direction and targets			
Developing and expressing a clear vision on self-management			✓
Creating awareness within the team of the business strategy, organisational context and client needs	✓	✓	
Setting / formulating clear objectives with the team	✓	✓	
Being clear on processes, procedures and room for self-management	✓		
Making a work / activity plan together with the team	✓		✓
2. Managing by results / 'hands off' management			
Managing by results	✓		✓
Giving the team 'free reign', patience, hands-off management	✓	✓	✓
3. Providing resources, creating conditions for learning and working			
Providing resources, safeguarding 'space' for learning, e.g. managing the work pressure	✓	✓	
Stimulating motivation for learning	✓	✓	✓
Developing a 'learning climate' (safe environment for learning)	✓		✓
Implementing improvement teams			✓
4. Coaching / supporting learning			
Coaching team members (giving advice, repeating targets.)	✓	✓	✓
Providing feedback on performance	✓	✓	✓
Supporting reflection	✓	✓	
Supporting self-assessment, assessment of competences and learning needs	✓	✓	
Making learning plans			✓
Stimulating the articulation of long-term learning needs	✓		

Table IV.7 Important team characteristics, influencing learning

Team characteristics	*Mentioned in interview #* 1	2	3
Organisation context: team is embedded in an organisation that is oriented towards self-management			✓
Physical work environment / space for the team fits team concept			✓
Team reward system: is learning rewarded?			✓
Team size			✓
Team composition: variation, role specialists		✓	✓