

Learning at the workplace

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Abstract

In contrast to the wide diffusion and significance of learning in non-formal/informal settings, and of learning taking place at the workplace in particular, relatively little is known about its exact nature, forms, drivers, barriers, effects, etc. This report investigates various aspects of the subject. First, it seeks to identify different forms of workplace learning as well as their usage by and diffusion among companies and people. The training/learning types most often applied in companies are visits to expos/trade fairs, followed by courses/seminars/conferences by external trainers. Considerably less widespread are job rotation, quality circles and self-learning activities as well as more modern work-related learning forms such as learning Islands, learning partnerships and platforms, networks of practice, communities of practice (CoP), cognitive apprenticeship and blended learning. Smaller companies show a clear preference for informal training activities (in-house off-the-job training and on-the-job learning).

Second, the report aims to discuss appropriate context conditions for learning at the workplace and to highlight barriers as well as conducive factors. The diverse influencing variables can be systemised into environmental framework factors, company organisation and culture, design of learning measures and resources, barriers at company level, and personal factors on the part of the workers.

Third, assessment of costs, benefits and effects of learning at the workplace are discussed, including managing and assuring quality of competence development. In this context, businesses are facing challenges regarding, for example, methods of assessment of benefits, evaluation of employee performance and competences as well as training needs assessment.

Fourth, at policy level, measures to foster the engagement of businesses and individuals in workplace-related learning are increasingly developed. This refers to financial support for and increasing the awareness about workplace learning, advice and consultancy in designing training and learning, programmes encouraging business cooperation and network formation in the field of training, and making visible and measuring informal learning. In this context, the present report identifies further strategic fields of action – at research, policy and company level – to support workplace learning is flourishing and meets today's and future demands.

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Introduction

The strategy launched by the European Council in Lisbon in March 2000 sets the objective of Europe to become the most competitive and dynamic knowledge-based economy in the world, capable of sustainable economic growth, creating more and better jobs, and developing greater social cohesion. From the reference to a knowledge-based economy it seems immediately clear that, in this context, (initial and further) education and training of Europeans and lifelong learning has to play a key-role in achieving these aims ⁽¹⁾. The importance of knowledge for general macroeconomic goals is, certainly, also reflected at the level of individuals and enterprises, as it contributes to their work performance, productivity, competitiveness, income and, ultimately, living standards.

While the relation between knowledge and performance is well recognised, public and policy attention to foster (vocational) education and training is often focused on formal learning, also because it is, as a phenomenon/process and almost by definition, better visible, measurable and, therefore, controllable. In addition, its provision can be organised by public authorities. However, there is wide consensus in recent research on the wide frequency among the European population of learning in non-formal/informal settings, as well as on the essential role of informally acquired competences for a continuous adaptation of vocational competences to changing requirements on the labour market. Furthermore, a paradigm shift from the dominance of traditional education institutions towards a diverse field of traditional and modern learning opportunities ⁽²⁾ that are more process and outcome oriented and follow modular structures can be observed (EC, 2006). This – and the recognition of the value of various forms of learning – also pinpoints the considerable relevance of learning taking place at the workplace (Leney, 2004; IKEI, 2005; EC, 2003a) ⁽³⁾.

Learning at the workplace includes a broad and diverse variety of models like job rotation, coaching, apprenticeship, e-learning, quality circles, etc. In contrast to the wide diffusion of such types of learning, relatively little is known about its exact nature, forms, drivers, barriers, effects, etc. (at individual and/or enterprise level). The lack of such information may imply a low degree of intentional influence and designing, at all relevant levels (individual, business, policy), to optimise up-take, effectiveness and efficiency of learning at the workplace. Although research substantiates the claim that informal learning constitutes the

⁽¹⁾ ‘Youth education attainment level’ and ‘participation in lifelong learning’ are explicit indicators to measure progress in the frame of the Lisbon strategy. Furthermore, with respect to VET the relevance of education and training for achieving the Lisbon goals is also acknowledged in the Copenhagen Declaration of 2002 (Available from Internet: http://europa.eu.int/comm/education/copenhagen/copenhagen_declaration_en.pdf [cited 2.7.2007]) and in the Maastricht Communiqué (Available from Internet: http://europa.eu.int/comm/education/news/ip/docs/maastricht_com_en.pdf [cited 2.7.2007]).

⁽²⁾ Modern in terms of new ways of training provision, e.g. e-learning or training partnerships/networks.

⁽³⁾ Learning at the workplace is of course also an important part of formal initial vocational education paths, especially in the frame of apprenticeship systems.

most important way of acquiring and developing the skills and competences required at work (Skule and Reichborn, 2002) such learning is – almost logically – not subject to any (quantitative) policy objectives (at different levels).

Clearly, a better understanding of non-formal and informal learning constitutes a prerequisite to better exploit the potential of and develop this type of learning for achieving the above-mentioned Lisbon objectives. Moreover, a continuous follow-up of the phenomenon of work-related learning from a research and analysis point of view seems imperative, as skill needs and occupational profiles constantly change, due to structural changes in the overall economy (technological change, globalisation, etc.).

Basically, this report aims at contributing to an improved and up-dated understanding of workplace learning in order to derive conclusions on how to arrange such learning to be most effective. In particular, the following research objectives are pursued:

- (a) to identify different forms of workplace learning and their usage and diffusion among companies (with a focus on SMEs) and people, and to highlight innovative types;
- (b) to discuss appropriate context conditions for learning at the workplace and to identify and highlight barriers hindering, as well as conducive factors supporting learning at the workplace;
- (c) to discuss how costs, benefits and effects of learning at the workplace can be assessed and measured;
- (d) to identify and highlight new and innovative initiatives at policy level (including apprenticeship systems).

Section 1 of this report aims at setting a reference frame by discussing in considerable depth the concept and notion of learning at the workplace. Instead of arriving at a definite and straightforward definition or typology, different models, forms and views of workplace learning are highlighted, based on different criteria of categorisation. Furthermore, new and innovative forms of learning are presented.

Section 2 deals with the spread and usage of different workplace learning forms among European companies and the workforce, whereby a special focus is laid on small and medium-sized enterprises as far as respective data is available.

Section 3 is dedicated to discussing conducive and hindering factors for work-based learning. Compared to previous studies an attempt is made to establish a broader and more comprehensive view on the subject, including environmental conditions, organisational factors, barriers and employee-related issues.

Section 4 deals with assessment issues in the area of learning at the workplace. Due to its often informal character, strong evaluation and control measures (quality assurance) are rarely applied in enterprises, and there is a clear gap between large companies and SMEs. The focus

is mainly on what kind of assessment and quality assurance tools are used in (small and large) enterprises with respect to learning at the workplace.

Whereas the previous sections deal with methods of workplace learning applied at company level, Section 5 analyses recent and innovative initiatives and measures introduced at supra-company level (State VET systems, government policies, support instruments, social partner initiatives, etc.). Initiatives discussed are those responding to new developments and changing requirements in the area of workplace learning.

Finally, Section 6 pinpoints the main conclusions of the analysis, including suggestions with regard to relevant conditions for fostering beneficial workplace learning at both, micro (i.e. company) and macro (i.e. public) level.

1. Learning at the workplace: definitions, typologies, forms

1.1. Concepts of workplace learning

Against the ambitious aim of ensuring a successful transition towards a knowledge society which is seen as a relevant pre-condition for realising the Lisbon objective, lifelong learning has become a key element of the education and training policy in Europe. In this context, lifelong learning includes all learning activities that are purposeful and undertaken on an ongoing basis, independent of their degree of formality, source of funding as well as mode of provision. Learning activities, in turn, are referred to as any activities of an individual organised with the intention to improve his/her knowledge, skills and competence, i.e. pinpointing the criteria ‘intentional’ (by the learner or another individual) and ‘organised’ (in terms of typically involving the transfer of information in a broader sense with a view to bring about learning) as the distinguishing factors vis-à-vis non-learning activities (EC, 2006) ⁽⁴⁾.

In contrast to this established terminology, a consistent and generally accepted definition of ‘learning at the workplace’ does not exist. In this report, we follow a rather broad conceptual framework without elaborating a very stringent definition, but discuss diverse (related) concepts and models to illustrate the phenomenon. The notion regularly associated with learning at the workplace is surrounded by a variety of terms with often similar or related meanings. Examples are: learning through work, at work, on-the-job learning, work-integrated learning, work-related learning or experience-based learning. In general, workplace learning aims at the development and acquisition of vocational competences and refers to any forms and concepts of internal and external learning (within and outside enterprises) being based on the work and work-processes in terms of learning contents and learning processes. Furthermore, in the wider sense it also involves learning through simulation at school (e.g. training companies, junior firms) (Dehnbostel, 2003).

The distinctive design and characteristics of skill development activities in companies differs from case to case. Probably most important in this regard is the differentiation of measures according to their degree of formalisation whereby in practice the distinction between those categories is blurred in many cases and often a combination of the different concepts is applied. Formal learning is defined as highly structured learning that takes place off-the-job, typically in classroom-based/institutional formal educational settings constituting in most cases a continuous ladder of educational achievements (Marsick and Watkins, 2001; EC, 2006). Formal learning is typically provided by an education or training institution, leading to a certification, structured in terms of learning objectives, learning time or learning support

⁽⁴⁾ In the following we will see, however, that in reality learning processes go far beyond intentional and organised activities, especially as far as learning at the workplace is concerned.

and intentional from the learners' perspective (EC, 2001). Programmes of joint part-time employment (resulting in workplace learning) and part-time participation in the regular formal education system such as the dual system/apprenticeship are classified as formal education (EC, 2006).

Outside of education or training institutions, learning may take place non-formally or informally (EC, 2001). Non-formal learning is also structured and intentional but usually does not lead to certification (e.g. within the national framework of qualification)⁽⁵⁾. Examples are combined theoretical-practical courses, private lessons or guided on-the-job training.

Informal learning, in contrast, results from daily activities related to work (EC, 2001; 2006) and is, therefore, not institutionalised and structured and the control of learning mainly rests in the hands of the learner (Marsick and Watkins, 2001). Summarising several definitions, informal learning is seen to be integrated into daily routines (i.e. experience-based learning), triggered by an internal or external jolt, not highly conscious (i.e. implicit learning), an inductive process of reflection and action, influenced by chance and linked to learning of others (learning by communicating) (Lee et al., 2004; Marsick and Watkins, 2001; Meier, 2002; Descy and Tessaring, 2001). It may include learning activities occurring in the family, in the workplace, in the daily life, on a self-directed, family-directed or socially-directed basis (EC, 2006). Informal learning might, for example, take the form of self-learning, practice or non-guided visits.

Table 1: Examples for formal, non-formal and informal learning

Formal education	Non-formal education	Informal learning
Participation in the formal education system (e.g. defined by the national framework of qualification) leading to formal certificate (including apprenticeship)	<ul style="list-style-type: none"> • courses external to the company (conducted via classroom instruction, including lectures, combined theoretical-practical courses (including workshops), conducted through open and distance education, private lessons) • guided on-the-job training, including information and instruction 	<ul style="list-style-type: none"> • taught learning (coaching/informal tuition, guided visits) • non-taught learning (self-learning, learning groups, practice, non-guided visits, visits of trade fairs/congresses)

Source: EC, 2006, p. 25

⁽⁵⁾ Being understood as the single, nationally and internationally accepted entity through which all learning achievements may be measured and related to each other in a coherent way (EC, 2006).

It should be mentioned that all of these three forms of learning may take place within an enterprise or externally and could be conducted individually or collectively; examples may be found in Table 1.

Next to these intentional learning concepts, some authors quote the terms of incidental and non-intentional learning, respectively, as a 'by-product of some other activity', such as interpersonal interaction, task accomplishment, learning from mistakes (trial and error) (Marsick and Watkins, 2001), which constitutes an important factor especially in the context of experience-based learning at the workplace.

Whereas attending education and training courses and getting qualifications lays the foundation for initial competence at work, the importance and role of workplace learning, and experience-based learning in particular, is related to the fact that the most significant learning effects occur in real work situations while mastering a concrete problem (work-integrated competence development; Meier, 2002) and improved performance is often more reliant on doing the job and learning from others (Felstead et al., 2004). Expertise development requires a continuous and subtle process of putting knowledge into action, codeveloping personal and professional knowledge, integrating individual knowledge into a larger dimension of knowledge held by groups and whole organisations (also see Box 1) rather than for simple information acquisition. The dynamic (business) environment results in a shift of emphasis from the mere transfer of knowledge to the facilitation of learning, particularly as far as (rapidly changing) work process knowledge is concerned. Work process knowledge might be referred to as complex and multifaceted knowledge encompassing the whole work process, compiled of tacit and explicit knowledge accumulated by the individual being part of an organisation (in terms of a particular community of practice (CoP) developing ideas about how knowledge should be acquired, applied and shared), mobilising this knowledge at individual level and, therefore, resulting in a knowledge-creating company (Nonaka and Takeuchi, 1995). Soft competences like creativity, conflict management, and personal development in the broadest sense play a key role in this context. Insofar, experience-based learning constitutes a valuable resource. According to a German study, the division between working and learning will disappear in future. In 2004, 55% of German companies thought that there will be no such division in 2020, compared to a share of only 44% agreeing to that viewpoint in 1997. 68% of the German enterprises were of the opinion that project and practice-oriented learning forms will displace classical vocational training (versus 53% mentioning that in 1997). Finally, 63% mentioned that education and training at the workplace will provide the same career chances towards top management positions as other learning forms (45% in 1997) (BIBBforschung, 2005).

Box 1: Organisational learning and learning organisation ⁽⁶⁾ ⁽⁷⁾

In recent years the notion of organisational learning or learning organisations has become very prominent as a tool to improve the performance of a company by a continuous increase of competences/skills/abilities of the workforce at all levels. Organisational learning may be triggered by changed environmental conditions (adaptive/single-loop/lower level/tactical learning) or the planned intention of the company's management (proactive/double-loop/higher level/strategic/generative learning), where the latter is seen to be more successful and effective in the long term.

Organisational learning which is generally seen to go beyond workplace learning of the individual refers to the combination of knowledge acquisition, information distribution, information interpretation within the organisation as well as organisational memory which must not necessarily be realised consciously or intentionally or result in observable changes in people's behaviour. Rather, organisational learning is realised, if the range of its members' potential behaviour is changed. As a result, a learning organisation is considered an entity being able to respond to new information by altering the programming by which information is processed and evaluated, i.e. an organisation disposing of a high level of adaptability (in terms of increasing the capacity of information processing and a continuous rebuilding of one's view of the reality). Thereby, the realisation of errors/mistakes is not seen as something negative but as a valuable resource for learning (and avoiding them the next time). Similarly, contradictions/conflicts are assessed to constitute a good basis for reflection and are, therefore, not suppressed. Against the background of an increasing complexity and uncertainty of the organisational environment, the rate at which organisations learn may become the only sustainable source of competitive advantage (Malhotra, 1996).

Originally, organisational learning focussed on the practice of five core disciplines/competences:

- systems thinking, i.e. focusing on the relationships among the individual parts of a system;
- team learning, i.e. the realisation of increased synergy and productiveness due to a group of people working together (the group is more than just the sum of its parts) as well as pro-active personnel development (continuously building up competences for anticipated future needs);
- shared vision, i.e. complete commitment to the achievement of the company's vision and best possible contribution to make this vision real; safeguarded by understanding the development of strategies as a learning process realised by employees' participation and free information flow;
- mental models, i.e. surfacing and testing one's deepest assumptions and beliefs on how the world works and helping others do the same;
- personal mastery, i.e. exploration of one's life experiences and desires to identify the own purpose in life and how to fulfil it.

⁽⁶⁾ See in Internet: <http://www.sfb504.uni-mannheim.de/glossary/orglearn.htm> [cited 2.7.2007].

⁽⁷⁾ See in Internet: <http://www.pegasus.com/aboutol.html> [cited 2.7.2007].

Various models explaining the process of experience-based learning are presently discussed, including, for example, models based on the so-called activity theory such as the expansive learning model (Engeström, 2001), the connective model (Griffiths and Guile, 2003) or the learning cycle of Nonaka and Takeuchi (1995) – all of them pinpointing the relevance of experience-based learning (i.e. practical activity) in combination with the ability to adapt to altered situations for coping with a continuously changing business (and, therefore, labour market) environment. These models also point at implications and insights into how workplaces, organisations and learning environments, including vocational education and training (VET) systems, may be designed to foster knowledge acquisition and skills among the workforce (also see Section 3).

1.2. Classifications and forms of workplace learning

According to the different notions and concepts as discussed above, approaches to systemising and classifying forms of workplace learning activities demonstrate a great variety. In this section, two important classification schemes concerning learning activities in the context of work (i.e. differentiation according to the location and setting of training as well as by the content of training) are presented to better illustrate what types of learning may occur in enterprises (Colley et al., 2002).

1.2.1. Workplace learning by location of training

Descy and Tessaring (2001) provide a classification of work-related learning methods, stressing the location of training as a systemising factor. Adapting the model of Dehnbostel and Dybowski (2001), various classes of work-related learning methods were suggested. Work-related learning may be tied to work (when location of learning and work are identical), connected to work (when work and learning are organised separately but sharing location and/or organisation models) or work-oriented (when learning takes place in centralised venues). Learning by working as well as learning through systematic instruction at the workplace are methods seen to be tied to work, including forms like craft training, traditional on-the-job training, group learning as well as the dual system referring to initial vocational training. Either tied to or connected with work are forms like quality circles, learning islands, order-based learning, coaching, interactive learning and apprenticeship – summarised under the categories of learning through informal or deliberate integration and learning through exploration and practical training – they are characterised by a combination of learning by on-the-job experience and more deliberate forms as for example school-based preparation. Learning in simulated work or production processes, aimed at the acquisition of complex skills and gain in experience, are implemented for example as training centres (Descy and Tessaring, 2001).

A second classification which is frequently used and which to some extent is as well based on the location of the training introduces terms like on-the-job, off-the-job and near-the-job

training. While training on-the-job generally concerns activities at the immediate place of work including learning due to the demands and challenges of daily work, training off-the-job takes place away from the enterprise and includes for example traditional continuing vocational training measures.

Box 2: Training off-the-job – Elias Emergency University Clinic Hospital, Romania

Elias Emergency University Clinic Hospital is a public health care services institution employing about 1 300 people in 2005. Between 2004 and 2006 a training and development project for the medical personnel aged 35-45 was run in the framework of the participation in a multinational research study requiring the attending of (international) specialisation courses by the neurology and cardiology department employees (both, nurses and physicians).

In the framework of this programme, almost 500 employees were trained to become more efficient. The project objectives are accomplished by training courses, seminars or symposiums held in the country or abroad.

The board considers that the personnel training and development will improve the medical services' quality, especially the ones with a significant degree of difficulty. As concerns the beneficial effects regarding both, the employees and the employer the following may be mentioned: personnel skills improvement, professional development or even initiation related to different medical specialisations and also a strengthened efficiency.

As a remark, negative effects arose due to the fact that after specialisation the employees may leave the institution, which financed the expenses afferent to the training courses. In this way, the institution is in prone of losing a significant part of its specialists.

Source: Mandl et al., 2006.

Training near-the-job refers to measures in proximity to the workplace in terms of location, time and/or content (Scholz, 2000). It has to be noted, however, that neither these concepts nor the allocation of the concrete forms are used non-ambiguous. Table 2 gives an example of this classification, showing a number of training activities from a personnel development perspective.

In addition to the classification of on-the-job, near-the-job and off-the-job training, some authors add the models of training along-the-job (concerning career planning and vocational development activities), out-of-the-job (concerning preliminaries to retirement) and training into-the-job, which refers to qualification for future vocational activities, including vocational school and university studies (Scholz, 2000).

Table 2: Personnel development measures by type of location of training

Personnel development measure	Training on-the-job	Training off-the-job	Training near-the-job
Job enrichment ⁽¹⁾	X		
Job enlargement ⁽²⁾	X		
Working team	X	X	
Job rotation	X		
Brainstorming		X	X
Planned instruction/initial training	X	X	
Introduction of new staff members		X	X
Internship			X
Training courses		X	
Case study		X	
Group counselling interview		X	X
Group dynamic approaches		X	
Conference, workshop/symposium, trade fair	X	X	
Career planning	X	X	
Teaching conversation	X		
Learning workshop			X
Mentoring, coaching	X	X	X
Appraisal interview			X
Successor-/assistance positions	X		X
Project work	X		
Quality circle			X
Presentation		X	
Role play		X	
Overtaking proxy tasks (substituting colleagues)	X		
Team building			X
Team training		X	
Semi-autonomous team ⁽³⁾	X		
Trainee programme	X		X
Practice firms	X		X
Behaviour training		X	
Workshop		X	X
Audio-visual training		X	X
Simulation (virtual reality, computer-assisted instruction, programmed instruction, business games)	X	X	
e-learning		X	X
Action/active learning ⁽⁴⁾	X		

⁽¹⁾ Job enrichment refers to measures including a vertical expansion of the tasks of an employee for him/her to attain higher qualification.

⁽²⁾ In contrast to job enrichment, job enlargement refers to the adding of qualitatively equal tasks with the aim of dissolving a too strict division of tasks.

⁽³⁾ Semi-autonomous working groups consist of 3 – 10 persons that are supposed to work on a specific definable task from start to end without a formal leader. Participants are free to choose working times, division of tasks, methods of completion of the tasks, etc.

⁽⁴⁾ Teams of 5 – 8 employees of different company departments cooperate for a duration of 3 – 6 months with the aim to solve an important company-wide problem (e.g. reduction of overhead costs, launch of a new product).

Source: Weinert, 2004; adapted and translated by the authors.

Box 3: Along-the-job and out-of-the-job training – PTK ECHO s.r.o., Slovak Republic

The Slovak company PTK ECHO with about 130 staff members has been active in the field of education and languages services, publishing, accommodation, restaurants and catering for about 15 years. The staff are offered training measures from the company's portfolio of training and education courses free of charge. A nice example of career development enabled by this training offer is a warehouse employee who went through several educational programmes and now is in a responsible position as a middle manager. Also older employees (close to retirement age) are invited into educational programmes for starting-up businesses, accountancy, personal computer knowledge or any other special course according to their wish. The aim is to enable them to establish small own businesses, for example as accountant, or a home career after retirement by providing training not necessarily being linked to their present work. Furthermore, the General Manager – owner introduced a specific educational offer for older employees, inspired during the training and re-qualification courses provided by the Offices of Labour Social Affairs and Family where she recognised the concerns of older people in the uncertain and difficult labour market which is in general not very appreciating the ageing workforce. In general, the training and educational activities for the own staff resulted in improved services of and in higher goodwill towards the company. It also guarantees the enforcement of the company's position on the Slovak market. The benefits of educational measures resulted in several cases in career growth and in a very low employee turnover.

Source: Mandl et al., 2006.

Further subdivision of on-the-job learning was suggested by Dehnbostel and Pätzold (2004) who distinguish working-type and learning-type forms of workplace learning. Working-type forms (forms of work organisation) refer to experience-based learning at the workplace. Although learning occurs mainly in an informal way, its effects are planned and the time for learning is an integral part of the working hours. Group work, forms of rotation, project work, continuing improvement and networks are applied. Whereas this type of on-the-job learning is limited to experience-based processes and is usually omitting planned learning activities, new learning-type forms (forms of learning) of workplace learning follow the principle of connecting experience-based learning with organised learning. They are characterised by a combination of planned (formal) learning activities and learning through experience (informal learning). In fact, the required integration of learning and working within the working process is conducted as workplaces and working processes are enlarged and enriched, regarding to organisational, personal and didactic-methodical aspects, creating a workplace setting which demands, fosters and supports learning processes. For this purpose, the work infrastructure is being connected with a learning infrastructure, providing additional resources of space, time, material and/or personnel. Important new learning-type forms (also see Section 1.3) are, for example, instruction/coaching, quality circle, learning workshop, learning islands and CoP (Dehnbostel and Pätzold; 2004; Dehnbostel, 2003). Both, working-type and learning-type forms are expected to initiate and support processes of improvement and innovation in a

significant way, where informal learning plays a central role (Dehnbostel, 2003; Dehnbostel and Pätzold, 2004).

Box 4: Instruction/coaching – ZEMAT, Poland

ZEMAT is a privately owned company established in 1957 in Lodz (Poland) employing about 60 full-time workers. Currently, ZEMAT is a manufacturing leader of a wide range of machines, from prototype custom made machines according to customer's demands and production specifications through simple machinery like impulse welders and cutters, to advanced vacuum formers and automated production lines.

As the business activities of ZEMAT require high technological and production-related qualifications the company, from the very beginning, has been paying much attention to stabilisation of the staff members, believing that its main asset is in a dedicated professional engineering staff. Long-term experienced employees, their knowledge and professionalism are a guarantee for the quality and reliability of ZEMAT. As a result, long-term employees, working in the company for a dozen of years, constitute the main part of the staff. Their experience and qualifications are used for the preparation of young/new staff. In this context, long-term staff of ZEMAT appear to be excellent teachers, mentors, and tutors who prepare and develop qualifications of young employees.

An example of these coaching activities may be shown by one of ZEMAT's work units disposing of eight employees being rather young people, which were recruited from technical schools. They are led by a 50 year old employee who also acts as mentor and tutor, as for the tasks to be fulfilled experience and memory capability have a key importance for success. ZEMAT hopes that these employees will have relations with the company for a longer time, will improve their qualifications within the company (also through the possibility of cooperating with production workers with long-term practical experience) and acquire new knowledge in the field. The firm's long-term development strategy envisions that these employees will constitute a locomotive core for the 'natural' restructuring of the firm.

Source: Mandl et al., 2006.

1.2.2. Workplace learning by content of learning

Another strand of systemising workplace learning is basically founded upon the content of learning as a discriminating criteria and was presented by Sonntag and Schaper (2006) and Sonntag and Stegmaier (2006). Knowledge- or competence-oriented activities, targeting improvement of vocational skills, knowledge transfer and promotion of flexible cognitive capabilities on the one hand can be distinguished from behaviour-oriented activities referring to modification of behaviour and personality development on the other hand. According to continually changing requirements, addressed to the workforce in modern work organisations, some measures available are in particular seen to be fostering competence acquisition in a

problem- and work-related way and supporting also self-organised and cooperative learning (Sonntag and Schaper, 2006). Table 3 gives an overview of selected knowledge-/competence-oriented methods especially matching these new requirements.

Table 3: Knowledge-oriented measures

	Intention/ objective of learning	Examples for measures
Cognitive training	<ul style="list-style-type: none"> • regulation of complex operations • problem solving 	<ul style="list-style-type: none"> • internalisation of mental actions • heuristic rules • self-reflection • self-instruction • multiple cognitive training
Workplace-focused cooperative forms	<ul style="list-style-type: none"> • working process knowledge • expertise 	<ul style="list-style-type: none"> • task-oriented information exchange • learning workshop • cognitive apprenticeship
Computer- and net-based learning programmes	<ul style="list-style-type: none"> • knowledge, skills • problem solving • mental models 	<ul style="list-style-type: none"> • training systems • tutorial systems • learner driven systems • simulation • online-teaching • online-tutorial • cooperative net-based learning cases
Complex teaching-/learning settings	<ul style="list-style-type: none"> • interdisciplinary qualification • vocational competence to act 	<ul style="list-style-type: none"> • guiding text method • learning islands • practice firms • case studies/business games

Source: Sonntag and Schaper, 2006, adapted and translated by the authors

Cognitive training activities are intended to qualify individuals for mastering complex tasks whereby the focus is laid on cognitive performance (such as planning of and decision-making in specific work tasks and self-critical reflection of realised outcome) rather than on the concrete conduction of individual duties. It includes also processes of self-reflection. Cognitive trainings are based on different teaching/learning methods (Sonntag and Schaper, 2006).

Methods subsumed under the category of workplace-focused cooperative forms are characterised through referring explicitly to work processes in means of contents and place of learning. As a prerequisite, opportunities for learning have to be provided at the immediate workplace whereby the arrangement of learning depends on real working- and learning

requirements as well as on the individual's developmental needs (Sonntag and Schaper, 2006).

Modern computer- and net-based learning programmes include flexible instruction and are supported by audio-visual media (e.g. video). It allows for differentiated learning through memorising and repetition (practicing programmes), interaction (tutorial systems) or through explorative processes (learner driven systems, simulations) (Sonntag and Schaper, 2006).

Finally, complex teaching-/learning settings aim to qualify the learner dealing with the complex knowledge and activity requirements at every days' work. Therefore multi-dimensional settings are created (Sonntag and Schaper, 2006).

Next to vocational and cognitive capabilities, soft skills like self-confidence and self-esteem, attitudes and values are required to empower individual and organisation in coping with situational needs. Pro-active, self-reliant and entrepreneurial behaviour is demanded. A range of methods concerning the development of personality as well as behaviour modification is available and – as a result of new and sophisticated forms of production and organisation – increasingly targeted at operative level (skilled worker) and the middle and lower management. Presently an emphasis on group-oriented activities is noticed. Table 4 gives examples of behaviour-oriented activities of personnel development seen to be notably relevant in modern work organisations (Sonntag and Stegmair, 2006).

Behaviour modelling and methods of team building can be subsumed under learning in problem-based, authentic contexts, offering learning opportunities in real learning environments and including real organisational units respectively, whereas mentoring, coaching and the leader-/member-exchange are based on counselling and supervising activities, using feedback and reflection as elements of learning. Simulations request a high degree of self-control and individual adjustment, mainly applied in computer-assisted types as business games are. Group-dynamic approaches, originally based on a clinical/psychotherapeutic background as well as outdoor trainings are subsumed under personality centred/experience-oriented measures of which reference to daily routine is not immediately visible. Whereas all methods mentioned under this section refer to explicit learning processes, learning through the design of work tasks and contents in form of work-immanent qualification as well as job assignment leads to competence development in a more implicit way. Job assignment aims to present challenging tasks to the individual, mostly used at management level. Both forms are summarised as task-oriented and structure-oriented approaches, respectively (Sonntag and Stegmair, 2006).

Table 4: Behaviour- and personality-oriented measures and activities

	Intention/ objective of learning	Examples for measures
Approaches in a problem-oriented, authentic context		
Behaviour modelling	<ul style="list-style-type: none"> • communication • coping with conflicts 	<ul style="list-style-type: none"> • films showing a behaviour model • role play • video feedback
Team building	<ul style="list-style-type: none"> • comprehension of group processes • communication • cooperation 	<ul style="list-style-type: none"> • analysing processes • problem catalogue • (working) techniques • reflection
Counselling- and supervision-oriented approaches		
Mentoring and coaching	<ul style="list-style-type: none"> • personality development • career advancement 	<ul style="list-style-type: none"> • mentors' behaviour as a model • counselling
Leader-/member-exchange	<ul style="list-style-type: none"> • leadership behaviour • attitude towards employees 	<ul style="list-style-type: none"> • in-group/out-group identification • recreating the relation towards the out-group
Simulation		
Simulation	<ul style="list-style-type: none"> • explorative learning 	<ul style="list-style-type: none"> • role play • business games • audio-visual learning environment
Personality centred/experience-oriented approaches		
Group-dynamic approaches	<ul style="list-style-type: none"> • self-image (view on oneself) 	<ul style="list-style-type: none"> • self-awareness • feedback • social learning
Outdoor training	<ul style="list-style-type: none"> • self-confidence • self-concept • problem solving • cooperation 	<ul style="list-style-type: none"> • navigation tasks • river crossing • boat trip • abseiling • assistance on simulated accidents
Task-oriented approaches		
Job assignment	<ul style="list-style-type: none"> • planning • shaping relations • self-concept • values and attitudes 	<ul style="list-style-type: none"> • challenging and problem-immanent tasks • project work
Work-immanent qualification	<ul style="list-style-type: none"> • planning • problem solving • interpersonal behaviour • self-esteem • self-concept 	<ul style="list-style-type: none"> • scope of action • participation • problem-immanence

Source: Sonntag and Stegmaier, 2006; adapted and translated by the authors

1.3. Selected modern forms of workplace learning

Technological innovation, changing in macro and microeconomic conditions, the globalisation of markets and supply chains led to fundamental re-organisation of the workplace and workforce. New forms of organisations, for example, manufacturing systems organised as high performance work organisations brought extended demands to the working individual. As a consequence, increasing degrees of worker participation and autonomy as well as broad occupational competences are required (Leney, 2004). There is a big demand for multi-tasking people who can do non-routine tasks showing high degrees of ‘situational’ knowledge, exploratory behaviour, problem solving and excellent communication capabilities. Connected to personal traits and competences such as self-reliance, self-confidence, pro-activity, creativity, an entrepreneurial spirit and self-direction are additionally associated to this new world of work, following a trend to work on multiple teams across multiple geographies, time zones, languages and cultures (Weinert, 2004; Reuter, 2005; Dehnbostel, 2003). Correspondingly, various companies question the effectiveness and suitability of traditional learning forms (Schulz, 2005). This section intends to provide a short overview on some of the modern work-related learning forms responding to these changing requirements employed by the European enterprises.

Learning islands match the imperative for integration of work and learning to a large extent through explicitly defining and extending already existing work places into places for learning. Learning islands are equipped with additional learning material, software and visualisation tools as well as modified organisational conditions like additional resources of time for learning processes. Developing a workplace into a learning island, usually five stages are passed. After analysing the workplace, the workplace-specific tasks, conditions and requirements to qualification (stage 1) and deciding towards or against development of a certain workplace into a learning island (stage 2), the infrastructure for working and learning is being installed (stage 3). In stage 4 targets, contents and methods of learning are stated on the basis of the organisational framework as well as the personal and social targets. Detailed planning of the work and the processes of the learning island as well as providing a model of quality assurance finally forms stage 5. In contrast to traditional working places, learning islands represent learning environments providing more time to pursue the processes of qualification and learning, following a holistic principle in designing work tasks (complexity, problem-immanence and variety) but still working on the same work tasks (Dehnbostel and Pätzold, 2004).

Learning partnerships and platforms⁽⁸⁾ are characterised by technical, organisational and/or pedagogical cooperation and competence-development activities which are based on agreements of objectives among the network partners. The network is usually constituted by a number of local institutions of training and education as well as the education and training

⁽⁸⁾ For public policy measures fostering the cooperation of enterprises in the field of workplace learning see Section 5.5.

managers in the companies. In the past, collaboration was often limited to the creation, organisation and coordination of apprenticeship training positions, while no agreed arrangements with regard to the contents and methods of training were made (Meyer, 2004). Modern forms of learning and working partnerships and platforms include learning through exploration and practical training like internship either in the context of initial or continuing training to provide insight into fields of which the own institution or enterprise is not involved. This includes forms of rotation between local enterprises as well as cross-border partnerships. Therefore, collaboration is conducted by enterprises which track a common goal and which expect additional profits through attending a learning network. The subject of the particular network can either aim to professional/technical or methodical or social/personal competences.

Networks of practice are another form of on-the-job learning which, in particular, is characterised by problem-oriented and cooperative learning, based on social processes. Networks of practice integrate work and learning and provide a setting where situated learning is combined with an effective knowledge sharing. Both, the concept of CoP and cognitive apprenticeships are examples, described under this section. Networks of practice are often implemented through application of network-technology in modern work organisations (e.g. virtual CoP). In this regard they are associable with the e-learning approach.

CoP are set up by experts, sharing similar work tasks or problems in order to find solutions or build innovations and are often constituted within a work organisation⁽⁹⁾. CoP are characterised by self-organised learning, exchange of experience and reciprocal support. Thus, emerging problems can be discussed, perspectives of a phenomenon can be demonstrated and the complexity of a problem can be recognised in order to develop new solutions. Problem-solving and learning are interlocked processes in CoP and a higher degree of efficiency and quality of solutions are resulting. Using internet technology, knowledge exchange and learning can occur at international level, bringing experts of different locations together, applied for example by multi-national enterprises (Lang and Pätzold, 2004).

Another problem-oriented form of workplace learning which explicitly includes processes of learning by others in every-day business is the cognitive apprenticeship approach. It follows an expert/novice-type interaction where experienced workforce (experts) supports the learner (novice) not only with explicit-theoretical but also with the more implicit, experience-based (practical) knowledge. Therefore, processes of recognition, of thinking, of valuation and of reasoning and the application of strategies are fostered. This concept transfers elements like application-oriented tasks, authentic activities and feedback of traditional craft training onto cognitive learning processes. Moreover, learners and experts are participating together in working groups and through the additional application of net-based learning environments, learning opportunities of distributed expertise are created where different experts can be called to impart complex knowledge. Empirical data show evidence of better results for

⁽⁹⁾ off enterprise level, CoP are associated to online-communities.

cognitive apprenticeships concerning learners' ability in problem-solving as well as their ability to apply earlier problem solving strategies to new and complex situations. In all, communication with people and in particular the exchange of individual experience plays a crucial role in the learning processes of networks of practice (Lang and Pätzold, 2004) and learning is not limited to knowledge and skills but attitudes and values are also developed through this types of workplace learning (Dehnbostel, 2003).

Work-related learning in simulated work processes is applied at schools as well as training centres within and outside enterprises. Simulations are of increasing importance as there are more and more complex work processes to be executed by the work force. Self-directed activity and problem-solving processes are an important part in simulations. Learning through a realistic setting of economic, locational or organisational criteria fosters the acquisition of complex qualification and experience, including also processes of reflection. Concepts like practical training courses, practice firms and task-oriented learning are involved (Dehnbostel, 2003). Moreover, computer-assisted simulations are applied in the context of e-learning applications.

E-learning is an approach to enhance learning supported by information and communication systems (Schüle, 2002). A great variety of e-learning instruments had been developed and distributed since the beginning of computer-based training⁽¹⁰⁾ in the 1980s. Since then, traditional distance learning courses are more and more rebuilt to new and complex systems where multimedia-based and interactive applications are incorporated. Examples are experience-based learning via immersive virtual worlds, experimental learning via computer-generated simulations, pedagogic veils (products teaching people how to use them), pedagogic learning objects or learning content management systems (Punie and Cabrera, 2006). Asynchronous learning which occurs just-in-time is possible and courses can be tailored to specific needs. Furthermore, e-learning fosters the learners' self-reliance and responsibility. Savings of expenses (not at least due to economies of scale as highly qualitative support material may be easily accessed by a high number of employees (Scholz, 2000), the availability of expertise within the entire enterprise and flexibility in time, location and contents of vocational programmes (i.e. orientation on the individual needs and requirements) are, among others, noted benefits of computer assisted learning methods (Scholz, 2000; Heitger and Baudisch, 2003; Heinicke-Renner, 2003; Schüle, 2002) and e-learning activities are typically working on application-oriented and individual cases, projects and situations (Heinicke-Renner, 2003). Furthermore, the technological options of modern e-learning solutions provide the opportunity of automatically integrate substantial controls of the learner's progress into the system. However, the lack of social contact and the necessity of self-motivation of the learner (particularly in combination with the danger of information overflow) should be mentioned as the most important disadvantages of this form of workplace learning. Furthermore, not all contents/issues are equally suitable for e-learning solutions (Schüle, 2002; Scholz, 2000).

⁽¹⁰⁾ Learning programmes provided by a single computer, frequently using CD-ROMs.

Web-based training ⁽¹¹⁾, simulation, tele-conference (video/audio), email, discussion forums, newsgroups, virtual workshops, business television are some out of a big range of e-learning methods ⁽¹²⁾.

E-learning courses can be assisted by tutoring which is seen as indispensable especially for trainees having little or no familiarity with self-directed online-learning ⁽¹³⁾ (Fietz et al., 2004). Tutors operate either in a face to face setting or as teletutors, where communication can be practiced synchronous (e.g. in virtual classrooms) and asynchronous (e.g. on discussion boards) (Mandl and Winkler, 2003; Heinicke-Renner, 2003). Thereby the benefits of network-supported learning will be reinforced by providing learners with individualised support (Fietz et al., 2004).

Blended learning is a hybrid method which integrates technology (such as internet, television, conference calls) with traditional methods of education or training. This concept typically includes learning arrangements which combine face-to-face courses, workshops or seminars with e-learning elements like email to maintain an ongoing dialogue with the participants (Sack and Reglin, 2004; Vejvodová and Hán, 2004; Cordes and Sauter, 2004, p. 123). In this respect, the concepts of e-learning and blended learning show some overlaps but in contrast, (tele)tutoring applied in blended learning arrangements rather supports face-to-face measures. Furthermore, measures of blended learning are not limited to simply alternating electronic-based and traditional presentations in a serial way but they experience an added value through optimising the coordination of different learning modalities (Vejvodová and Hán, 2004; Sack and Reglin, 2004).

Another important trend coming up during the last years concerns the implementation of corporate universities or other comprehensive approaches taken by enterprises to provide (workplace) learning for their employees. In contrast to public education the corporate university is designed to support the implementation of the enterprises' strategic goals (Sauter, 2004). Application of e-learning methods, development of strategic management- and leadership-competences, implementation of a knowledge management system as well as a virtual network of executives, experts and knowledge to fostering self-organised learning are crucial elements of most corporate universities. An example of a virtual organised corporate university is the DaimlerChrysler Corporate University which aims to design and coordinate top-management (executive) development programmes and implement a virtual communication infrastructure (Heitger and Baudisch, 2003; Neumann, 2003, p. 60).

⁽¹¹⁾ Web-based training refers to learning using network-technology (internet, intranet). Elements of web-based training are information-systems (e.g. databases) and learning programs (consisting of exercises, tests, etc.).

⁽¹²⁾ Terms like (e-)learning-platforms, learning management systems, learning content management systems, authoring tools and authoring management platforms are also mentioned in the context of e-learning. They are software tools and –platforms aiming to administrate e-learning methods, media –contents and courses as well as trainees or to create, evaluate or provide learning exercises, contents and/or communication tools.

⁽¹³⁾ Online-learning can be seen as a subset of the broader e-learning category as online learning refers to learning via internet or intranet.

Box 5: Vocational training and professional development at DaimlerChrysler

The multinational car manufacturer DaimlerChrysler pinpoints vocational training and professional development as strategically important factor for sustainable corporate success and, therefore, promotes lifelong learning through various programmes in more than 40 training centres worldwide. In 2004, the company invested more than EUR 255 million in vocational training and professional development in Germany and employed more than 10 000 apprentices (80% of them in Germany, constituting about 40% of all apprentices at German automobile manufacturers).

As regards professional development, increasing importance is paid to training measures directly related to the workplace and to the specific job of the employee. For young employees nature summer camps have been initiated in partnership with the global nature fund, aiming at raising the employees' environmental awareness and improving their intercultural skills.

In the field of management development, DaimlerChrysler elaborated a group-wide standardised process known as leadership evaluation and development. In 2004, it was further developed to become a sustained resource-management system for key technology. Special management training focusing on leadership, general management and strategy with an everyday company and work-environment context is, furthermore, organised by the DaimlerChrysler Corporate University. In 2004, it invested EUR 7 million in a total of 5 650 participant days.

Source: <http://www.daimlerchrysler.com/>

2. Spread of learning activities among European enterprises

Against the background of the ongoing discussions on the increasing importance of lifelong learning fostered, not at least, by the realised demographic shift (keyword: ageing society/workforce) as well as the necessity of disposing of latest knowledge in a steadily increasing competition on the market an upward tendency of workplace learning may be expected for the years to come.

This section intends to provide an overview on respective available data as regards the involvement of the population, employed persons and companies (with particular attention paid to SMEs) in (various forms of) workplace learning. Thereby, it has to be mentioned that a comparatively wide range of such data exists, being at least partly not coherent due to different approaches to definitions (what is understood by workplace learning, what types and forms are included) and target groups (population versus employees, all companies versus selected size classes/sectors, etc.). Furthermore, as regards comparisons between countries the varying framework conditions (e.g. design and quality of the education system, structural characteristics of the private sector, availability of public support for training activities, etc.) need to be kept in mind. Consequently, the following data should rather be considered as a benchmark roughly describing the level of Europe's engagement in workplace learning.

In the framework of the European labour force survey 2003 (*source*: Eurostat) 42% of the EU-25 population indicated to participate in lifelong learning activities (Table 5). Thereby, the highest shares could be found in Denmark, Luxembourg, Austria and Finland, the lowest ones in Greece and Hungary (as well as Romania if also the acceding countries are considered). Generally, the participation in lifelong learning decreases with age and is higher for men than for women. Furthermore, a positive relationship between engagement in lifelong learning activities and educational attainments can be observed. On European average, only 4.5% of the population attended formal education/training courses in the year of the survey (highest shares in the Nordic countries and Slovenia, lowest ones in Central Europe as well as in Greece and Malta) whereby women are more involved in this kind of lifelong learning than men. In contrast, almost one third of the European population (more than 80% in Luxembourg and Austria, respectively, but less than 10% in Hungary and Romania) takes advantage of informal learning activities (higher share of men than women). About one quarter of the Europeans uses self-study material, being particularly widespread in Denmark and the Slovak Republic and hardly ever applied in Hungary. One fifth of the population of the EU-25 refers to computer-based training when engaging in lifelong learning, and almost as many as that indicate to benefit from non-formal learning. With regard to the latter, in Denmark, Sweden and Switzerland the respective share is about three times higher than the EU-25 average while it is markedly lower in Bulgaria, Greece, Italy, Lithuania or Romania, for example. Almost no differences by gender can be noted. About 84% of the Europeans participating in non-formal learning mention occupational reasons for that (more than 90% in Germany, France, Lithuania and Poland), the other 16% indicate personal/social reasons.

Table 5: Percentage of the population participating in lifelong learning, by learning form and country, EU-25

	Total	Formal ⁽¹⁾	Informal ⁽²⁾	Self-study ⁽³⁾	Computer-based training ⁽⁴⁾	Non-formal ⁽⁵⁾
AT	89.2	3.0	85.6	48.0	16.6	25.3
BE	41.9	4.0	32.3	24.1	15.7	19.5
CY	37.8	2.1	30.2	23.6	14.9	20.6
CZ	28.7	1.4	21.4	19.6	12.4	12.9
DE	41.9	3.4	37.3	24.4	21.8	12.7
DK	79.7	7.7	65.6	53.3	42.4	47.1
EE	31.4	3.7	25.1	17.8	10.3	14.8
ES	24.5	4.7	16.0	9.4	7.2	10.3
FI	77.3	9.3	69.5	47.1	27.8	41.3
FR	51.0	0.9	45.9	37.2	28.1	20.1
GR	17.4	1.3	14.2	12.1	6.6	4.9
HU	11.7	2.9	6.0	5.5	2.8	4.8
IE	48.7	5.4	45.0	34.5	18.9	14.0
IT	48.6	4.5	46.8	35.5	24.4	5.1
LT	27.8	3.0	25.1	20.5	8.9	7.8
LU	81.9	1.0	80.9	59.1	47.1	15.9
LV	46.2	4.8	42.6	36.3	14.0	13.4
MT	53.2	1.4	52.0	50.1	19.0	9.4
NL	41.6	7.8	32.3	23.5	16.7	11.0
PL	30.0	4.1	26.6	20.7	10.7	9.8
PT	44.1	4.0	42.1	33.9	16.1	9.3
SE	71.0	13.3	52.6	41.7	38.1	48.0
SI	82.0	7.6	78.1	50.4	29.9	23.5
SK	59.5	1.0	57.1	54.6	12.2	20.5
UK	37.6	8.4	n.a.	n.a.	n.a.	34.5
EU-25	42.0	4.5	32.5	24.0	19.2	16.5
BG	16.1	1.2	15.4	13.0	7.0	1.7
CH	68.0	6.7	49.9	42.1	19.3	53.3
NO	34.7	3.9	n.a.	n.a.	n.a.	32.9
RO	10.0	1.4	9.1	7.4	2.9	0.6

n.a. = not available

⁽¹⁾ Education and training in the regular system of schools, universities and colleges.

⁽²⁾ Self-learning which is not part of either formal or non-formal education and training, by using different methods like books, computers, learning centres or educational broadcasting.

⁽³⁾ With the assistance of printed material (e.g. professional books, magazines and the like).

⁽⁴⁾ Online internet based web education.

⁽⁵⁾ All types of taught learning activities which are not part of a formal education programme.

Source: Eurostat (labour force survey 2003).

This data hints to the assumption that already presently the workplace is regarded as the most important venue for learning by the labour force. For example, more than 60% of Norwegian employees indicate that they have acquired their knowledge through learning through daily work while vocational training is mentioned by only about 15%. Also employers confirm the importance and value of daily work for the employees' ability to do a good job (mentioned by more than 90%) and consider schools and studies to be least important as to this regard (mentioned by less than 30%) (Skule and Reichborn, 2002). Also recently published research covering the UK suggests that formal/external training and qualification activities are not rated so highly as on-the-job training by employees wanting to improve their performance at work (Felstead et al., 2004): one in four employees are of the opinion that training courses are of little or no value in improving work performance while over the half think that learning by doing was the most effective means of achieving a higher work performance, with 90% agreeing that they pick up most of their skills through on-the-job experience (and being of particular relevance to those lower down the occupational hierarchy).

Similar results are found by the European Foundation for the Improvement of Living and Working Conditions (Eurofound, 2001) indicating that up to 71% of European employees mention to learn new things in the framework of their work as well as by a German study (Sauter, 2004) mentioning that 67% of the employees participated in informal acquisition of knowledge (e.g. self-learning or reading of specific literature) in 2000.

The above-mentioned variety of data may in this context be illustrated by other available German data showing that only about 11% (Western Germany) and 16% (Eastern Germany) of the employees participated in vocational training within the last three years prior the survey. This considerable difference to the data mentioned above is assumed to be attributed to different definitions for the learning activities applied. The authors find that lower qualified persons, foreigners, blue-collar workers and people working in smaller companies are underrepresented among the participants in vocational training. Furthermore, significantly less part-time employees than full-time employees are involved in training activities which is explained by cost-effectiveness considerations of employers (Büchel and Pannenberg, 2004).

On the basis of CVTS II-data stemming from 1999 and dealing with companies with 10 or more employees it can be shown that more than three fifths of all European companies are engaged in training activities of any type. In the northern European countries this share lies considerably above average while the Mediterranean countries show markedly less initiative as to this regard (Table 6). A positive relationship between company size and involvement in training activities can be observed (e.g. 48% of the enterprises with 10-19 employees belong to the group of training enterprises while the share is as high as 95% in those companies with 250 or more employees). CVT courses (¹⁴) are offered above-average by Danish, Swedish and Norwegian companies and hardly applied by Greek and Romanian ones. Of the European

(¹⁴) Continuing vocational training courses that were designed and managed by the enterprise itself (managed internally) or managed by organisations not part of the enterprise (managed externally).

companies 55% provide the respective training activities managed internally, a learning form that is particularly widespread in the UK or Italy and hardly ever applied in the Baltic Countries. About one third of the European enterprises offers continued vocational training in work situation (in particular in Ireland (71%) and the UK (63%), hardly ever in Greece and Romania) and at conferences, workshops, lectures and seminars (more than 60% in Germany and Denmark, low diffusion in Greece and Romania), respectively. Considerably less widespread (12%-15%) are job rotation (with the exemption of Ireland, Sweden and the UK, for example), quality circles (comparatively widely applied in Denmark and the UK) and self-learning activities.

A German study (Sauter, 2004) shows that three quarters of the enterprises offered internal or external courses or other forms of learning such as learning at the workplace or learning via media in 2003, resulting in a medium level of employer-based training supply if compared to the other European countries. Nevertheless, the authors find that the share of employers offering training activities has dropped by 10 percentage points since 1993. If only focusing of the own offering of training measures or companies releasing their employees from work for them to attend respective activities, only 41% of the Western German and 44% of the Eastern German companies were engaged in employees' skills development in 2003 (Bellmann and Leber, 2005). The authors, too, find a positive relationship between involvement in training activities and company size class which is attributed to the more limited resources and the more prevalent proxy problem and danger of trained employees being poached by competitors in smaller enterprises. As regards specific industries, the public sector (e.g. social security, health and social services) as well as the companies in financial intermediation (banks, insurance companies) are seen to be particularly active in the field of competence development while producers of consumer goods, the construction industry and the agriculture sector are engaged below average.

In 2002, most of European SMEs (up to 80%) were involved in competence development activities (Table 7) whereby the highest engagement could be found in the sector of business services (only 13% have not applied any competence development methods within the last three years prior of the survey) and wholesale trade (14%) and the lowest involvement turned up to occur in the transport/communication sector (28%) and in construction (23%). Like in the CVTS, a comparatively high level of competence development activities could be found in Northern and Central Europe whereas Southern Europe is characterised by a low level of training activities. This North-South divide is also mentioned by other pan-European studies (EC, 2003a).

The higher level of engagement in (workplace) learning compared to the CVTS-data may be explained by the broader understanding of learning forms: The most important types implemented by SMEs were visits to expos/trade fairs (particularly important in wholesale trade and manufacturing), followed by courses/seminars/conferences by external trainers (applied above-average by companies active in business services as well as in Greek and Icelandic companies), reading of professional literature (e.g. in personal services) and meetings among personnel for knowledge exchange (e.g. in manufacturing) (EC, 2003a).

Table 6: Training enterprises as percentage of all enterprises, by learning form (CVTS (¹⁵)) and country, EU-25

	Any type of training	CVT courses	Internally managed courses	CVT in work situation	Job Rotation, exchanges or secondments ⁽¹⁾	Learning/ Quality circles ⁽²⁾	Self-learning ⁽³⁾	Continued training at conferences, workshops, lectures and seminars ⁽⁴⁾
AT	72	71	57	19	7	6	8	23
BE	70	48	42	56	29	19	15	32
CZ	69	61	37	28	5	6	17	49
DE	75	67	59	54	4	11	14	61
DK	96	88	55	48	27	26	65	68
EE	63	47	28	25	11	10	15	49
ES	36	28	33	15	9	9	8	14
FI	82	75	47	39	21	16	40	58
FR	76	71	49	25	17	11	10	19
GR	18	9	60	7	2	4	2	11
HU	37	24	36	16	5	4	6	22
IE	79	56	58	71	36	17	19	54
IT	24	23	64	15	13	5	1	16
LT	43	21	14	15	2	4	7	33
LU	71	50	41	46	29	11	23	44
LV	53	26	19	30	4	7	14	38
NL	88	82	32	50	13	15	31	50
PL	39	26	36	20	12	1	7	26
PT	22	11	55	14	4	5	2	13
SE	91	83	63	50	35	14	29	56
SI	48	33	48	24	9	14	10	42
UK	87	76	68	63	35	24	30	52
EU-25	61	53	55	36	15	12	15	36
BG	28	17	40	16	5	7	8	15
NO	86	81	60	49	21	15	31	53
RO	11	7	34	4	2	2	2	3

⁽¹⁾ Job rotation and exchanges with other enterprises entails training if these measures only are planned in advance with the specific purpose of developing or improving the skills of the workers involved. Normal transfers of workers from one job to another which are not part of a planned developmental programme are excluded.

⁽²⁾ Learning circles are groups of employees coming together on a regular basis with the primary aim to learn about the requirements of the work organisation, work procedures and workplace. Quality circles are working groups with the aim to discuss about problems and search for problem-solving in the production and on the workplace. Participants have to be integrated in the planning and controlling procedures of the enterprise. A moderator coordinates quality circles.

⁽³⁾ Open and distance learning courses, video/audio tapes, correspondence courses, computer-based training.

⁽⁴⁾ Only if the primary purpose of an employee attending them is training/learning.

Source: Eurostat (CVTS II-Survey 1999).

⁽¹⁵⁾ Continuing vocational training are training measures or activities, which the enterprises finance, partly or wholly, for their employees who have a working contract. CVT measures include CVT courses, which can be managed internally or externally, and other forms of CVT. These other forms are for example planned periods of training using the normal tools of work, job rotation, exchanges, secondments, attendance at learning/quality circles, self-learning and instruction at conferences, workshops, lectures and seminars.

Table 7: Percentage of SMEs using different methods for developing the competence base of their human resources in the last three years, by enterprise size, Europe-19⁽¹⁶⁾

	Number of employees			Average
	0-9	10-49	50-249	
Visits to expos/trade fairs	57	70	78	58
Courses/seminars/conferences provided by own personnel	19	38	54	21
Courses/seminars/conferences provided by external trainers	39	56	70	41
Study visits	17	22	41	18
Job rotation (in-house or in other firms)	8	17	29	9
Tutor/mentoring activities for staff	10	20	27	11
Promote reading of professional literature	36	39	58	37
Cooperation with consultants and advisers for developing internal competence	21	32	39	22
Meetings among personnel for knowledge exchange	32	46	56	33
Other activities	4	5	5	4
% of SMEs not involved in any of the suggested methods	20	9	4	19

More than one answer allowed

Source: EC, 2003a (ENSR Enterprise Survey 2002)

These data show that smaller companies show a clear preference for informal training activities to be explained by lower costs, better integration into the daily business life or better adaptability to the specific requirements of the individual employee and/or company. These results are confirmed, for example, by research on UK's *Best 50 small and medium enterprises to work for* showing a clear preference for short rather than long formal courses as well as for in-house off-the-job training and on-the-job learning, and in practice, the skill development activities in those companies involve a high proportion of internally provided, informal training (Stone et al., 2006).

Recent research which was conducted in five European countries⁽¹⁷⁾ demonstrated that SMEs tend to prefer non-formal and informal mechanisms such as on-the-job learning/learning in the daily work, visits to expositions/trade fairs and job/task rotation within the enterprise. Table 8 shows the relevance of different practices for SMEs (IKEI, 2005).

⁽¹⁶⁾ Austria, Belgium, Denmark, Germany, Greece, Spain, France, Finland, Iceland, Ireland, Italy, Liechtenstein, Luxembourg, the Netherlands, Norway, Portugal, Sweden, Switzerland and the UK.

⁽¹⁷⁾ Spain, France, the Netherlands, Austria and Finland.

Table 8: *Relevance of different practices for increasing the enterprises' knowledge, competence and skill base, by enterprise size, selected European countries* ⁽¹⁸⁾

Variables	Enterprise size		
	10-49	50-249	Total
External-to-the-enterprise practices			
Visits to expositions/trade fairs	5.8	6.0	5.8
Attendance to conferences/seminars provided by external personnel	3.6	4.5	3.8
Attendance to training courses provided by external-to-the enterprise personnel	4.7	5.8	4.9
Cooperation with other enterprises	4.0	4.4	4.1
Study visits to other enterprises/institutions	3.3	3.7	3.4
Job rotation and exchanges with other enterprises	1.6	1.5	1.6
Reading of information available in trade and sector magazines, publications	5.1	5.8	5.2
Reading of information available in Internet (websites, databases, etc.)	4.8	5.8	5.0
Analysis of patents and licenses	2.7	3.6	2.9
Internal-to-the-enterprise practices			
Internal training courses/seminars provided by own personnel	4.0	5.4	4.3
Self-study activities during working time	4.3	4.7	4.4
On the job learning/learning in the daily work (for current personnel)	6.7	7.3	6.8
Job /task rotation (in-house)	5.6	5.8	5.6
Coaching/guidance activities for staff by other people in the enterprise	4.8	5.9	5.0
Tutor/mentoring systems for new employees	4.7	5.5	4.9
Apprenticeship schemes	3.9	4.2	3.9
Meetings among personnel for knowledge exchange/quality circles	4.8	5.6	4.9
Innovation and R+D activities	4.4	5.6	4.6

Results from '0'=not relevant for my enterprise to '10'=very relevant form my enterprise

All enterprises

Source: IKEI, 2005 (Leonardo CODE Project Survey 2004)

As regards computer-based learning, a German study, for example, shows that 88% of large companies (i.e. the 350 top players of the German economy) apply e-learning whereby computer-based training is the most widespread type (mentioned by 91%), followed by video courses (65%) and web-based training (57% use the intranet, 23% the internet). The main

⁽¹⁸⁾ Spain, France, the Netherlands, Austria and Finland.

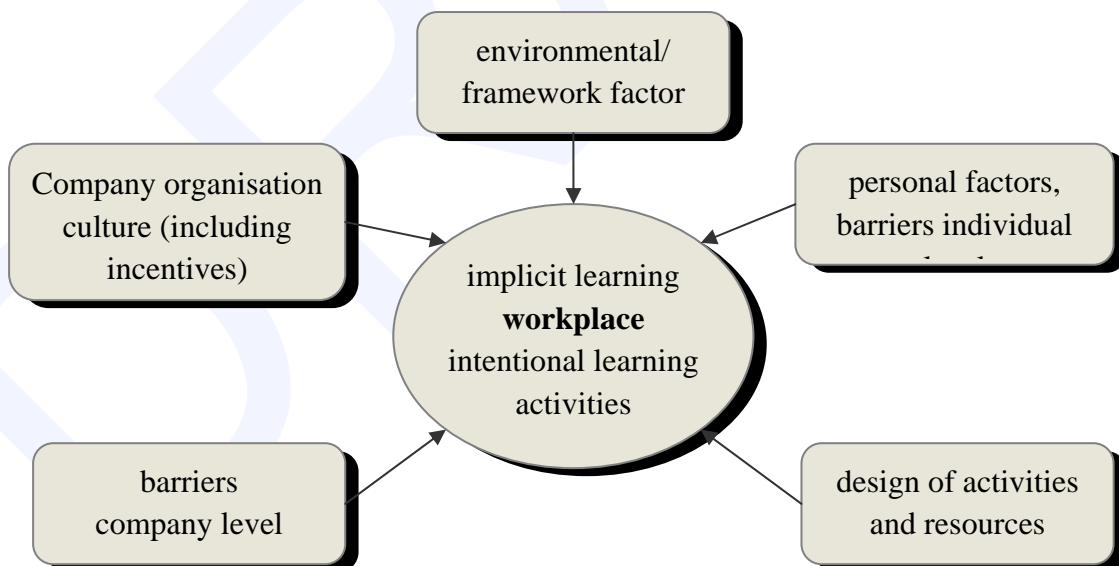
contents of e-learning refer to application software which is explained by the substantial supply of training tools in this area as well as the preferences of the users towards software-based solutions. Nevertheless, only one fifth of the companies indicate that more than half of the employees are trained by e-learning. So, e-learning reaches a considerably lower number of employees than traditional learning forms – but an increasing number of participants (and hence, number of companies adopting it) is expected for the years to come (Riekhof and Schüle, 2002). As regards SMEs, the spread of e-learning is supposed to be much lower, even though by now the majority of smaller companies uses the Internet for their business needs. With reference to competence development, however, there is a lack of awareness concerning the practical benefits for the enterprise, an unsatisfactory supply of e-learning material adapted to the specific needs of SMEs as well as a general preference for more informal training tools (also see above; Daelen et al., 2003). Furthermore, in the framework of a British study (Felstead et al., 2004) half of the interviewed employees reported that the Internet had been of no use (and further 11% that it has been of little help only) in helping them to improve their work performance.

3. Conditions for effective workplace learning

The occurrence, nature and effectiveness of learning activities at the workplace and in companies is dependant on a variety of factors. Awareness and understanding of these factors is a pre-condition to foster and appropriately design such learning, at firm level (business strategy) as well as at policy level. This section focuses on analysing the various factors influencing learning at the workplace (i.e. conducive factors, barriers, requirements, context conditions, etc.), while taking into account the very different forms and types discussed in the previous sections.

While earlier studies have often looked only at certain types or segments of such factors or at specific forms of learning, it is the aim in this section to establish a broader and more comprehensive view and a corresponding systematisation of factors. This is based on bringing together and combining existing research in this area. For example, Eraut et al. (2004) have developed a model of ‘learning factors’ and ‘context factors’ impacting on learning in organisations, Skule and Reichborn (2002) have identified a number of different factors promoting learning through work, and Ellström (2001) has suggested various factors facilitating or constraining integration of learning and work. By further developing this type of former research, an analytical framework to systemise the diverse influencing variables is outlined in Figure 1.

Figure 1: Factors influencing workplace learning



In the figure, it is roughly distinguished between intentional and implicit (or non-intentional) learning activities, emphasising that both forms are actually prevalent in companies and acknowledging the important role of purely learning through daily work experience and concrete problem solving. ‘Environmental framework factors’ refer to the (business/social)

environment external to the firm, for example market structure, technology development. Certainly, then, ‘company organisation and culture’, such as division of tasks, human resources development practices, attitudes, have an important effect on learning processes in the enterprise. In addition, more structural ‘barriers at company level’ exist, which mainly pertain to the firm’s ‘capacity’ to provide (intentional or planned) learning opportunities. At the same time, characteristics of the learner (typically the employee) are of relevance as well, shown as ‘personal factors and barriers’. Finally, the specific ‘design of learning measures and corresponding resources’ (facilities) is important especially with reference to organised or formal competence development activities. In the following the different bundles of factors are discussed more thoroughly.

3.1. Environmental or framework factors

In order to survive and being successful, companies have to continuously adapt to the (changing) economic and social conditions of their wider environment. The adaptation process implies and requires the acquisition of new skills and competences – in professional, technical, management or social terms – also at the workplace and job level, thereby almost inevitably influencing the degree and quality of learning in the work context. This relationship is empirically confirmed by Skule and Reichborn (2002) who identify a positive correlation between exposure to competition (of the entire company) and ‘learning-intensity’ of jobs, as based on an investigation of Norwegian enterprises. For employees, in order to frequently adjust to new tasks and challenges, a comprehensive work-process-type of knowledge is demanded (Section 1) which in turn calls for an appropriate learning-conducive organisational and job design (see below).

Diversification of technologies and increasing specialisation of businesses represent another trend in external conditions leading to a drive towards more firm-specific and workplace learning. For instance, this is illustrated by Beynon et al. (2002) using the example of the UK printing industry where technological diversification and specialisation are limiting the exchange of staff among the industry’s companies. This has led employers to introduce and invest in new training provision, including a new apprenticeship scheme. This is confirmed by an Austrian business survey, showing that the main motive of apprenticeship training (mentioned by 91% of surveyed firms) is to have young workers who exactly fit to the firm’s specific requirements (Flixeder, 2000).

3.2. Company organisation and culture

For companies the question arises how to best meet the learning-related requirements and demands imposed by the business environment and how to foster and enable competence development and learning among the workforce. In this context, company organisation and culture plays an important role especially for inducing implicit learning at work.

The potential for experience-based learning at the workplace is significantly determined by the organisational design of work. Although there is no one best way or form of learning-conducive work organisation, the literature suggests a number of options or elements favouring processes of learning through work and the acquisition of work-process-type knowledge and problem-solving abilities:

- (a) task variation in the job: frequently changing tasks give scope for applying skills and knowledge in different contexts, where new options for action and practices can be developed (Ellström, 2001; Frank et al., 2004; Dehnbostel et al., 2004). Especially project-oriented organisation is seen to provide such possibilities (Meier, 2002). Also job rotation constitutes an appropriate instrument in this respect. This even may extend to mobility across enterprises (for example in the case of apprenticeship);
- (b) complete and comprehensive work processes: the tasks and duties of employees should be defined broadly and comprise all phases from setting objectives, planning, execution to control, therefore also including a certain degree of managerial responsibilities. Only holistic tasks allow the employee to fully understand the individual steps of working processes (Ellström, 2001; Meier, 2002; Skule, 2004; Dehnbostel and Pätzold, 2004);
- (c) external contacts: possibilities for informal learning through outside contacts – in particular customers, but also suppliers, networks of colleagues, professional forums, trade fairs, etc. – is regarded as essential for competence development (Skule, 2004; Frank et al., 2004). Such outside networks as learning channels seem to be especially preferred by and important for entrepreneurs themselves and management level (Lans et al., 2004; Gielen et al., 2003). In order to be sustainable they have to function in a reciprocal way.

Box 6: Learning through external contacts in a service company

For example, a UK business service company, approximately 50 staff, provides opportunities for senior employees to be seconded for a short time to a client firm, with a view to learning more about the client's perspective.

Source: Stone et al., 2006

- (d) teamwork and communication: collaboration and information exchange, including informal communication, makes possible reflection upon own practices, taking on new working practices, etc. (Frank et al., 2004). Indeed Boud and Middleton (2003) found that learning from peers is a predominant mode in work sites;
- (e) involvement in problem solving: employee participation in problem solving allows for an improved understanding of work processes and may induce 'developmental' activities (Ellström, 2001) and so-called horizontal or sideways learning (suggested by the learning models of e.g. Engeström, 2001 and Griffiths and Guile, 2003). A specific instrument are 'partisan strategies'. Partisans are – sometimes temporary – groups aside the routine

organisation and working on particular tasks or problems with high autonomy and degrees of freedom. They are questioning traditional practices and working towards innovative solutions (Meier, 2002).

Overall, the above elements suggest flatter hierarchies and more egalitarian power relations to be advantageous when it comes to create an organisation fostering (experience-based) learning at work (see also Boreham and Morgan, 2004). However, Lee et al. (2004) and Boud and Middleton (2003) correctly note that apart from formally introduced company structures, also informal structures and social relations (sometimes strongly bound informal CoP, 'knowing the right people', newcomers versus old-timers, etc.) are relevant. This in turn limits intervention to influence workplace learning.

Next to company structure and organisation also leadership style may influence learning processes at work. Feedback culture is regarded as highly important in this respect, where feedback is understood as information on results of actions (Ellström, 2001). (Negative) feedback constitutes a central step in a learning cycle and can help to correct false assumptions, break inadequate routines, and stimulate exploration. However, as Ellström (2001) notes, a too strong emphasis on short-term feedback may impede learning results in the case of developmental, innovative forms of learning where a focus is on creation of new practices. In addition, learning among employees is enhanced if the management acts as a role model in this respect (Kailer, 2006). If the management shows openness for new solutions this encourages explorative behaviour of workers.

Furthermore, a clear and systematic overarching human resource policy seems to be conducive to overall learning in the firm (Pukkinen et al., 2001). It is, however, especially the smaller enterprises which lack such strategies and rather follow ad hoc approaches. In general, personnel development appears to be more effective if more responsibility is put on line managers and their staff (e.g. needs assessment, selection of participants, evaluation), whereas the HR department is mainly supporting and advising line managers, initiating and suggesting new instruments, organising infrastructure, selecting external experts and educating and supervising trainers. Career policy is a particularly important HR policy element. Taking into account competence acquisition in career paths and advancements is encouraging learning efforts and willingness of employees (Dehnbostel and Pätzold, 2004; Kailer, 2006). But rewarding skill acquisition is also possible through material incentives like salary, bonuses, etc. (Lee et al., 2004; Meier, 2002; Skule, 2004). However, as Beynon et al. (2002) illustrates using a case from the UK banking sector, such pay structures have to be carefully designed to ensure fairness and balance regarding other wage determinants. Finally, it is not only skill or knowledge acquisition which should be rewarded, but providing incentives for knowledge transfer and sharing seems to be at least equally important.

In designing work organisation firms do often disregard the potential effects on learning. This is not only because the creation of learning-conducive working conditions may imply contradictions with purely production- or cost-oriented criteria of organising work. What is more, businesses are often unaware of the fact that unintentional or experience-based learning

takes place at all and such type of informal learning is often not regarded as learning (Lans et al., 2004).

3.3. Design of (semi-)intentional learning activities and resources provided

The conditions discussed above relate to the general design of work organisation and business strategy and do not refer to how particular and more intentional learning activities should be organised. However, a lot of intentional and explicit learning takes place in enterprises as well. Moreover, some authors suggest that at least some structuring (semi-structuring) and backing of informal implicit learning can improve its effectiveness or even is imperative (Nyhan, 2005; Lans et al., 2004; Schneeberger and Petanovitsch, 2005; Ellström, 2001). This is referred to by Dehnbostel and Pätzold (2004) when discussing new forms of learning, where work infrastructure is enriched by learning infrastructure (environments), for example learning islands or quality circles (see descriptions in Section 1). In such environments the same tasks are carried out with more time available, especially for reflection, and with support of various learning material. So, organised learning is combined with informal experience-based learning.

Another example is what Boreham and Morgan (2004) call ‘opening space for the creation of shared meaning’. This refers, for instance, to the documentation of common experiences and best practices in a company’s operating procedures or to a tutor pack actually used in a collaborative process as a vehicle for the consideration of how work is organised and how knowledge can be shared (Unwin et al., 2005). From a learning theory point of view these are examples of how implicit knowledge is transposed to explicit knowledge by way of externalisation.

Box 7: Structuring implicit learning and making knowledge explicit – the case of a small manufacturing firm

An example for ingeniously organising implicit learning refers to an Austrian cable manufacturer, approximately 10 staff, which is using a firm-specific questionnaire game. The questions refer to organisational issues, work procedures, products, customers or competitors (e.g. who are our five most important competitors?). The game is played once a month among the staff. New questions can be included any time. By this way, knowledge which may otherwise be exchanged informally and unstructured, is disseminated in an organised and controlled form.

Source: IKEI, 2005.

The importance of work process knowledge and problem-solving capabilities as well as the experience-based learning forms in companies imply a changing role of teachers and

instructors. They increasingly become facilitators and supporters of learning in all aspects (e.g. facilitating group work or discussion) rather than being content experts and transferring knowledge (Lans et al., 2004). The new tasks also include providing guidance and coaching as well as monitoring and assessment of competences (Tessaring et al., 2004) and this has implications for trainers' education, too. However, seen from another perspective, also education and skills of managers have to be adapted towards pedagogy and teaching methods to support and structure learning processes in workplaces.

Notwithstanding the importance of social interaction in the context of learning processes, individualisation represents another trend in organising learning activities (in school as well as in company). Supporting learning in an individual way is seen as a critical factor in stimulating and motivating to learn, taking into account different starting positions of for example disadvantaged or more talented (Flixeder, 2000; Lans et al., 2004). For example, considering the ageing workforce, specific requirements of older employees should be taken into account, for example help to handle modern learning techniques (Kailer, 2006). A example is e-learning, where individual support is a pre-condition for learning success.

3.4. Barriers at company level

Whereas the sections above deal with which conditions businesses should set in order to promote learning at work, this section focuses on factors hindering businesses to be more active especially in intentional and organised learning activities and competence development. In a few studies barriers for SMEs have been empirically investigated. Recent research among 765 SMEs from five European countries⁽¹⁹⁾ demonstrated that for these enterprises organisational problems were the main barrier for competence development, even more than financial constraints (IKEI, 2005; see also EC, 2003a). Organisational problems mainly refer to the daily workload of employees, business pressure and the associated scarcity of the resource 'time' (Table 9). Also, the CVTS of 1999 identifies 'no time' as a more significant barrier than 'too expensive' for firms to provide continuing training. Indeed, time is regarded as one of the most important learning resources and a conflict between available time and learning is repeatedly cited (e.g. Ellström, 2001). Considering what has been said above about requirements due to increasing competition, i.e. more learning especially of work-process-type knowledge, firms are running into a dilemma when pressures on resources increase and they have to be concentrated on doing immediate work.

Another relevant barrier is lack of awareness and proper assessment of learning needs, in particular for very small firms which often lack dedicated HR expertise (see also Pukkinen et al., 2001; Stone et al., 2006)⁽²⁰⁾. This is also connected to uncertainty regarding the benefits

⁽¹⁹⁾ Austria, Finland, France, the Netherlands, Spain

⁽²⁰⁾ More information on the application of relevant management tools by SMEs is provided in Section 4.

or return on investment of competence development and leads to a lack of initiative. Moreover, such returns can have significant lead times (Skinner et al., 2003).

Finally, in training the problem prevails how the investment can be secured over the long term. Actually, the fear of skilled labour being poached by competitors is not to be neglected as the data show. In some cases this can make employers prefer informal and non-certified training.

Table 9: Barriers for enterprises to engage in competence development activities (percentage of enterprises identifying the barrier as significant)

	Enterprise size (employees)		
	10-49	50-249	total
Insufficient budget/costs are too high	34.1	35.4	34.3
Employees' workload makes activities difficult to organise	36.4	38.6	36.8
Difficult to assess the firm's knowledge and skill needs	8.2	3.4	7.3
Lack of information on possible sources of knowledge/skills	8.8	3.7	7.9
Available sources of skills and knowledge are unsatisfactory	8.1	9.8	8.4
Lack of motivation of employees	24.8	12.9	22.7
Risk of trained employees being poached by competitors	16.9	15.5	16.7
Lack of government support	22.3	24.0	22.6

Source: IKEI, 2005.

Box 8: Assessment of learning needs – the case of a medium-sized manufacturing firm

An UK pump system manufacturer, approximately 150 staff, carries out an on-the-job assessment for each role in the company, with an analysis of the competency and skills required currently as well as those anticipated for five years hence. From this, a training programme is developed individually, for each employee.

Source: Stone et al., 2006

3.5. Personal factors and barriers related to the employee

Learning efforts and learning success is not only dependant on organisational conditions, activities and barriers on the part of the firm, but also on personal factors and barriers of the recipients of learning, i.e. the workers.

A key factor is what Ellström (2001) calls learning readiness. Such learning readiness may be composed of different components and, in turn, partly be influenced by organisational

conditions. For example, basic attitudes towards learning on the one hand and motivation in the specific context on the other hand play a role (Meier, 2002). Higher motivation does not only lead to the person accepting suggestions or offers to learn, but also to pro-activity to actively identify learning options themselves (Marsick and Watkins, 2001). Willingness to learn can be limited if the specific needs and potential benefits are not apparent, so incentive structures provided by the company, as discussed above – and including time made available during working hours – can encourage motivation to learn. Career purposes have been identified as the most important reason to attend vocational courses for the age group up to 35 years (Schneeberger and Mayr, 2004). It is as well mentioned as a major motivation for undertaking more training by 30% of European working citizens in the 2004 Eurobarometer on vocational training (EC, 2005). Also, a wider visibility and applicability of informally acquired competences can encourage learning, emphasising the importance of the question of recognition and possibilities to then continue in formal education paths. The above mentioned Eurobarometer survey shows that recognition and certification would encourage training for 24% of respondents.

Learning readiness does not only refer to attitudes and motivation, but also to learning capabilities. First, general educational level seems to positively influence learning on the job (Skule and Reichborn, 2002; EC, 2005). Second, learning through experience appears to presuppose some related initial explicit knowledge which cannot be acquired by experience (Ellström, 2001). This, however, underlines that learning through experience or at the workplace cannot be regarded as a full alternative to explicit and formal knowledge transfer, nor does it balance out differences in initial education, rather the combination of both appears most effective.

Learning and knowledge transfer does not only involve recipients but also providers. Especially in workplace settings, where learning happens informally through social interaction (e.g. colleagues), the providers do not always have an explicit teacher role. In a work context various factors may hamper teaching, instruction and support, for example the fear of worsening the own position (having competitors for advancements, eventually losing the job) when transferring knowledge (Kailer, 2006). Consequently, also teaching readiness or readiness to transfer knowledge has to be encouraged and taken into account in incentive structures.

Box 9: Encouraging teaching at the workplace – the case of a large manufacturing firm

For example, in a Latvian electrical equipment manufacturer, approximately 700 staff, senior employees are involved in mentoring and training newcomers during a three months time. The mentors receive an additional remuneration of up to one quarter of their regular monthly salary.

Source: Mandl et al., 2006.

4. Costs, benefits and quality management

In an increasingly competitive business environment, company-based competence development has to be economically justified in terms of costs and benefits. This section focuses on what challenges businesses are facing when attempting to measure input and output of training activities, what practices they are actually applying to do so, and what they are doing or can do to manage and assure quality in their competence development efforts.

Assessing costs and benefits of VET is certainly not only an issue at firm level, but at an overall social level as well. However, as has been shown above types of and conditions for workplace learning are very diverse, and research results on outcomes of companies' training investment in general will not allow for conclusions at individual firm level or for individual training practices. Moreover, methodological problems especially in grasping benefits are serious. In any case, many investigations find that training provided by businesses pay off in general (Descy and Tessaring, 2005), a few selected approaches are presented below.

Box 10: Selected studies measuring effects of company-based training

For example, a comprehensive survey-based analysis of costs and benefits of in-company vocational training (apprenticeship) in Germany shows that results vary widely depending on various factors, although, overall, the balance is regarded to be positive when applying a rather broad understanding of benefits and a rather long-term view (Beicht et al., 2004). Only for a small proportion of approximately 15% of enterprises training would not pay off. Influencing factors are the business cycle (with growth the chance increases to utilise the investments) and, on the cost side, remuneration received by trainees. When taking into account positive external effects results become even more favourable.

Next to examining more formal work-based education and training, impact assessments have also been carried out in the frame of analysing so-called high performance work systems (HPWS). A central element of such work systems is informal learning processes and knowledge creation. Looking at HPWS in the US, Appelbaum et al. (2000) find that differences in how quickly knowledge is accumulated, how widely it is dispersed, and how easily it is passed along to subsequent cohorts all affect rates of productivity growth among firms and that productivity growth is likely to be higher in plants with a HPWS. Some studies have attempted to measure effects of on-the-job CVT through income changes on the part of the participants (employees). Such research found mixed evidence, but by and large a slightly positive impact of job-related training on wages and salaries could be identified (Büchel and Pannenberg, 2004).

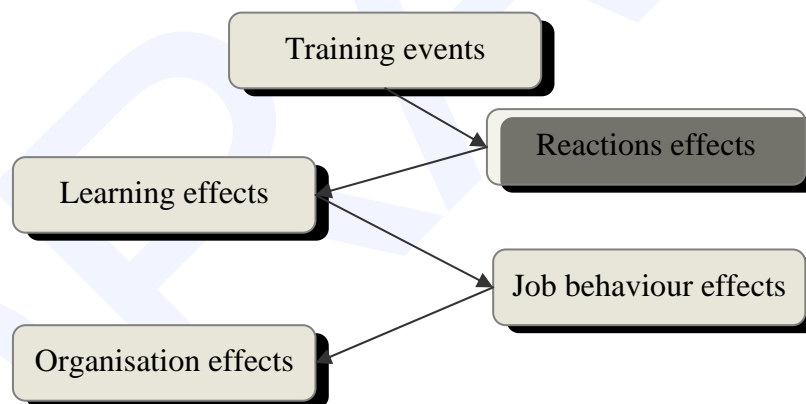
Summarising a number of training impact studies, Hansson et al. (2004) conclude that continuous vocational training provided by companies lead to substantial gains for employers (e.g. productivity, profitability). However, research results are not entirely consistent with respect to whether informal/specific or formal/general training is more effective. In any case, effects of training seem to materialise only at least one to two years after training.

From the viewpoint of the firm, assessing costs and benefits of learning and training activities constitutes only one element of a comprehensive competence development management, including components of planning, controlling and quality assurance. Such a management system is frequently associated with a number of deficits or problems, in particular for smaller enterprises.

First, competence development management covers mainly organised learning and training and regularly disregards the majority of informal learning within the company (Meier, 2002). This is to a certain extent due to the fact that the awareness of implicit learning processes is low and hardly intentionally influenced (Section 3). However, to grasp and make explicitly visible the status of a firm's broader 'learning culture', so called learning culture inventories have been developed in recent years. These are diagnostic methods to measure an organisation's learning culture along various items covering different dimensions such as framework conditions, cooperation among colleagues, leadership, information exchange or personnel development.

Second, even for organised training activities, effects are difficult to assess, in particular as far as benefits are concerned (costs are easier to evaluate). Problems occur at different levels of evaluation (Figure 2).

Figure 2: Levels of evaluation



In many cases the assessment is limited to 'reaction effects', i.e. subjective views of the participants concerning their satisfaction immediately after receiving training. 'Learning effects' refer to new knowledge acquired and can be evaluated only for cognitive contents. More important is, however, what can be transferred to the workplace and practically applied (job behaviour effects). That transfer of new knowledge and skills is often not evaluated, for example because relevant performance criteria do not exist. In addition, there may be many positive side effects which are difficult to capture. As Stone et al. (2006) report on basis of their analysis of 50 high performance work systems (HPWS) SMEs in the UK, training serves

internally as motivating element and is encouraging loyalty and commitment. It impacts positively on customer care, innovation, and creativity.

Finally, 'organisation effects' pertain to changes in the performance at organisation level. Furthermore, a causal relationship between training efforts and changed behaviour in the working context or organisation effects is hard to determine, especially over longer periods of time as many other influencing factors may interfere (Bergmann, 2003).

These measurement and causality problems can be overcome only with cost- and time-consuming methods such as control groups, and the challenge to correctly evaluate effects increases the higher the share of behaviour-oriented learning and (non-organised) developmental learning is. In this sense, the sophistication of a firm's controlling instruments may not necessarily be seen as an indicator for the quality of learning and competence development in the firm.

Indeed, the above mentioned analysis of 50 HPWS SMEs reveals that many companies do not systematically calculate or measure costs and benefits in competence development. They are not certain as to how cost-effective their systems are and quantifying resources and outcomes are regarded as problematic. Moreover, training is seen in a wider context of motivation and commitment (Stone et al., 2006). A qualitative research study among 26 American large corporations shows that this holds true not only for SMEs. The question to managers about linking learning to business results generated many comments about the difficulty of measuring learning's value in business terms and the challenge of isolating learning's value contribution (ASTD, 2006). Case study research from Germany found that success of different forms of work-integrated learning in companies is typically measured implicitly through informal observation (Grünewald et al., 1998).

Data from Eurostat's 1999 continuing vocational training survey (CVTS) confirms the patterns discussed above. Overall, only 44% of EU-25 companies providing any CVT to their employees are somehow evaluating its effects (small firms 39%, medium-sized 52%, large 71%). Measuring satisfaction levels (i.e. reaction effects) is the most common instrument, applied by more than 70% of those making assessments. Tests to check new competences (i.e. learning effects) are used by only 30%. Finally, performance indicators related to work processes and results (job behaviour effects) were found in only 19% of enterprises, while differences between size classes are small.

Third, also a systematic evaluation of employee performance and competences is difficult, in particular for non-cognitive and more behavioural and tacit-type knowledge and skills (social skills, problem-solving capabilities, creativity, context knowledge, etc.). More sophisticated approaches like work samples, recorded observation, etc., are cost-intensive and the quality criteria of measurement are still questionable (Straka, 2004). This contributes to the fact that there are rarely any efforts in enterprises today, to explicitly record, document or recognise competences acquired in work processes. Assessments of such competences are normally done in (non-systematic) appraisals and reviews via a dialogue between manager and

employee, with a high weight of self-assessment (Frank et al., 2004). The 50 HPWS SMEs analysed by Stone et al. (2006) all operate a system of performance appraisals or reviews.

Finally, also systematic training needs assessment and written training plans are not applied by the majority of European SMEs. A recent survey among 765 SMEs from 5 European countries⁽²¹⁾ reveals that approximately one third have implemented such competence management tools, whereby the occurrence increases with firm size (Table 10). For the 50 UK-based HPWS firms (see above) this share is approximately 40%. Regarding the assessment of training/skill needs, Eurostat's 1999 CVTS arrives at very similar frequencies of occurrence. In the entire EU, on average 32% of enterprises use this tool, ranging from 29% in the 10-49 employee size class, 45% in the 50-249 class, and 57% for large scaled enterprises.

Although a highly professional and systematic competence development management may in principle be regarded as an important success factor for learning and training in companies, it has to be acknowledged that a respective lack, especially in SMEs, is not only due to low awareness and insufficient management. It is often a rationale decision in view of the costs of maintaining a sophisticated system, the inherent methodological problems questioning reliability and validity, and the need for more flexible systems for designing training and learning in environments requiring multi-faceted, tacit knowledge, giving scope to quickly respond to new opportunities and situations. Thus, even though there is surely room for upgrading competence management in smaller businesses care should be taken to not over-regulate or over-standardise processes of learning and training in SMEs.

Table 10: Percentage of enterprises with formal management tools for competence development

	Enterprise size (employees)		
	10-49	50-249	total
Formal system for evaluating personnel performance	30.5	51.9	34.4
Formal system for evaluating personnel training needs	28.8	50.6	32.7
Written training plan	29.8	68.8	36.9

Source: IKEI, 2005.

⁽²¹⁾ Austria, Finland, France, the Netherlands, Spain

Box 11: Comprehensive quality assurance in competence development in a medium sized manufacturing firm

The case of a Dutch machine parts manufacturer, approximately 85 staff, shows that existing quality assurance systems for competence development can be implemented also in medium-sized companies. In the last years production planning has become an important issue and more workers are involved in production process programming. This needs constant reflection on the planning level as well as the operative level and intensive cooperation between both. Employees had to develop a more holistic view on the tasks. Also continuous innovation, quality and flexibility is imperative to stay competitive, which in turn requires closer cooperation with customers. Under these circumstances, the company's success depends on the knowledge and skills of its employees. So, the company runs a very active training strategy linked to overall business strategy. A system of measurement and evaluation of staff performance and a regular monitoring of competence development have been introduced. In this context, the company complies with the Investors in People Standard and received a respective certification.

Source: IKEI, 2005.

5. Recent and innovative policy initiatives

At supra-company level national and European public authorities have developed a wide range of measures to foster competence development of the workforce. These are either targeted at employees or employers or refer to structural changes in the framework conditions of training. However, the vast majority of respective initiatives are related to formal learning taking place with institutionalised training providers (Pukkinen et al., 2001) which can be attributed to the fact that this kind of learning is better visible, measurable and, therefore, controllable than (informal) workplace learning, also from a policy point of view. Nevertheless, also instruments focusing on workplace-related learning are increasingly developed. This includes both, formal training and access to external consultancy services in this field as well as more informal empowering methods to management and organisational innovation (EC, 2003a).

This section aims at pinpointing recent or innovative initiatives and measures introduced at supra-company level, such as State VET systems, government policies, support instruments, measures implemented by social partners, etc. It is not the intention to provide a substantial overview or taxative list of all respective measures available at national or European level. Rather, interesting initiatives responding to new developments and changing requirements in the area of workplace learning as well as to a number of issues (i.e. barriers/obstacles) raised in Section 3 are to be discussed.

Measures/initiatives to foster workplace learning may be linked to different immediate objectives (such as stimulating training or increasing productivity) and take different approaches, ranging from changing the legal framework conditions facilitating competence development in companies to assistance in detecting training needs and planning respective efforts to the direct support of their realisation (e.g. provision of training programmes or financial support) (IKEI, 2005). In the following, selected policy initiatives favouring workplace learning will be presented. They are grouped by domains addressed, although overlaps may occur where specific measures respond to various aspects.

5.1. Financial support of workplace learning

European governments not only provide, but also fund vocational training provided by private sector training suppliers. Public funding of CVT is a traditional core policy instrument justified by the fact that firms would not be in a position to fully secure their investments in training and that there are clear positive externalities related to training. In addition, financial constraints are in second place in the ranking of barriers to CVT provision (Section 3). Nevertheless, in most of these cases the public financial support refers to training measures external to the company (i.e. not learning at the workplace in the strict sense). Programmes implemented within an individual company are in most cases only financially subsidised, if they are conducted by an external training provider and the new knowledge/skills are not only

utilisable in the specific enterprise (this is, for example, the case for tax refunds or subsidies for training costs) ⁽²²⁾. Similar holds true for the field of financial incentives targeted at the individuals to stimulate them to undertake learning opportunities (e.g. grants, learning accounts, income support). Exemptions are, for example, the Netherlands or Luxembourg where also the costs of internal training (the wage costs of the trainers) are eligible for the respective tax allowance (Schneeberger and Mayr, 2004). So, if a Dutch company organises training for its own employees, costs for teacher wages, instruction rooms and study equipment are deductible from corporate income tax, if they are used at least for 70% of the time for training activities (Jansen, 2003).

One of the comparatively few examples for public financial support for learning at the workplace refers to the transitory programme ‘on the job’ training (in-work training) of the Greek organisation OAED ⁽²³⁾. The programme addresses enterprises or consortia of enterprises employing at least 100 persons and conducting activities for the completion and the improvement of vocational skills of their employees (i.e. internal CVT courses). It is implemented all over Greece in 63 industries and involves more than 250 vocational specialisations. Enterprises have to design and submit their training proposal (including the ‘curriculum’ and its modes of materialisation) and receive – if awarded – 50% to 70% of the necessary financial means from OAED and the European Social Fund (ESF, the remaining costs are to be contributed by the enterprise[s]). For enterprises with less than 300 employees a training provider needs to be hired, larger enterprises may provide training with their own means.

Another practice refers to the Italian law 236/93 financing company training plans (company-based training or experimentation for individual training courses) of micro enterprises as well as precarious and low qualified workers ⁽²⁴⁾. Companies may apply for contributions for carrying out projects of constant training, i.e. jobs enabling an adjustment or improvement of the workers’ experience. The educational activities must concern interventions related to the areas of quality, technological and organisational innovation or safety and environmental protection. The public contribution granted to single firms (eligible are companies of all size classes) can reach a maximum of EUR 25 000, applications of partnerships of companies are supported up to EUR 100 000 (with a maximum of EUR 25 000 per enterprise). The company where the workers get their training must guarantee a financial support of at least 20% of the total cost of the project.

⁽²²⁾ Some of the public expenditure for fostering vocational training is, however, also dedicated to directly support training in companies. This might, on the one hand refer to apprenticeship training and on the other hand to training for slow learners, handicapped persons or socially impaired juveniles. These above-mentioned approaches may be seen to constitute rather traditional public support (e.g. wage subsidies) they will be omitted in this report.

⁽²³⁾ See in Internet: <http://www.oaed.gr/> [cited 4.7.2007].

⁽²⁴⁾ See in Internet: <http://www.fondosocialeuropeo.it/ennewfse/aziende.htm> [cited 4.7.2007].

A different approach has been chosen by the Spanish *Servicio de Integración Activa en la PYME* (service for active integration in SMEs) being offered by the High Council of Spanish Chambers of Commerce and the National Employment Institute (IKEI, 2005). Targeting both regional SMEs (up to 250 employees) and job seekers, the first stage of the initiative refers to the identification of the skill needs of SMEs in a specific region. On this basis, free training (including general knowledge (such as personal development and information technologies skills and job-specific training) is provided to selected candidates registered with the Public Employment Service. The third stage refers to paid internships with companies for a duration of up to two months mainly funded by the Public Employment Service (70%-75% of the total budget). During the first wave of the measure (2002-03) training was provided to 1 005 participants (482 of which were afterwards hired by SMEs).

In 2003, the reform of the French vocational training system on the initiative of the social partners (IKEI, 2005) introduced the so-called professionalising contract (*contrat de professionalisation*). Thereby, youngsters up to 26 years and unemployed persons are entitled to a combination of an employment contract of 6 to 12 months and training during at least 15% of the contract length (minimum of 150 hours). In the framework of the assessment of the reform in July 2004, 73% of the SMEs considered to apply this contract type and expected advantages thereof (e.g. recruitment perspectives, tailor-made skills for the company, flexibility) to this contract type. 58% of the respondents indicated that they will use this contract for recruiting young graduates, 32% for young unemployed, 23% for unemployed over 26 years and 14% for disadvantaged people (handicapped, long-term unemployed, etc.).

5.2. Awareness on the importance of workplace learning

In Sections 3 and 4 it has been demonstrated that the awareness about learning processes taking place at the workplace may be low and that effects are difficult to measure and hardly visible for employers. This implies an underestimation of training benefits and an under-investment in profitable training projects. So, institutional and/or legal infrastructure encouraging employers to invest in training and making them aware of the potential benefits seem to be a suitable instrument for fostering workplace learning (Descy and Tessaring, 2005).

Against the background of aiming at increasing the awareness of the population on the relationship between continuous (vocational) training and employability, Slovenia, for example, puts emphasis on pinpointing the importance, necessity and omnipresence of lifelong learning: the Slovenian lifelong learning week has been designed in 1996 to contribute to the development and dissemination of the theory and practice of lifelong learning in the society⁽²⁵⁾. Traditionally, the seven-day event is held in the third week of October and brings together numerous organisations, associations and individuals committed

⁽²⁵⁾ See in Internet: <http://llw.acs.si/> [cited 4.7.2007].

to learning and education with the aim of helping to develop a positive attitude towards learning and promoting the recognition of it as the key to a better life. The lifelong learning week thus helps to promote awareness of the fact that school education is not enough for the attainment of sufficient knowledge and skills to last the whole lifetime and to open up all paths for one's personal development, including the relevance of creating a learning environment in companies and the value of non-formal and informal learning. The lifelong learning week is being initiated and coordinated by the Slovenian Institute for Adult Education and besides being a nation-wide promotional event it has proven to be the best occasion for celebrating outstanding learning achievements of adults. During the week, many presentations, educational, informative, advisory, cultural and other events and exhibitions are taking place at national and local levels. The project is being sponsored by the Ministry of Labour, Family and Social Affairs and the Ministry of Education and Sports.

Another possibility to encourage lifelong learning refers to the award of prizes to companies implementing innovative or efficient ways of continuously upgrading the skills of their employees. One example as to this regard constitutes the Austrian KnewLEDGE prize⁽²⁶⁾ having first been awarded in 1999. The aim of this instrument is to reward innovative training concepts that have proven to be efficient in practice as well as to generate ideas at the level of those responsible for personnel development. The rate of participation is high and the feedback is very positive. The prize is awarded in three different categories (up to 100 employees, 101-500 employees and more than 500 employees) for innovative approaches of companies of all economic sectors (ranging, for example, from traditional manufacturing to information technologies services). In 2005, prizes were also awarded to a qualification network of construction companies in Upper Austria or the SOS Children's Villages. The award is based on a two-stage selection process conducted by a jury consisting of both, theorists and practitioners. Award criteria are the holistic character of the personnel development in coherence with the corporate strategy, the inclusion of personnel development in the company planning, the target groups of the measure and their involvement in the elaboration of the training plan, the implementation of the concept and the evaluation of the implementation. Next to the annual prize awards various events (such as the KnewLEDGE congress in 2001) are organised to foster an exchange of good practices and the generation of new ideas (Strasser, 2005).

5.3. Advice and consultancy to promote workplace learning

As discussed in Section 4, smaller enterprises in particular face a management and planning deficit with regard to competence development and problems in identifying skill needs constitute a barrier repeatedly cited by employers. Hence, there is obvious demand among European businesses for support to evaluate competence gaps and in designing corresponding

⁽²⁶⁾ See in Internet: <http://www.knowledge.at/> [cited 4.7.2007].

measures to overcome them. As a result, some European countries have established well known contact points for businesses providing them advice and consultancy as to this regard.

An example for the provision of advice relating to (workplace) training refers to the REDE programme in Portugal being organised under the aegis of the *Instituto do Emprego e Formação Profissional* (employment and vocational training institute). Since 1996, the programme offers consultancy support as well as training and management support for small enterprises (less than 50 employees) by applying an integrated approach lasting for one year, oriented on the strengthening of the enterprise's competitiveness, mainly supporting problem solution and continuous investment in new competences and necessary knowledge (vocational training). The support services are designed on tailor made solutions and to run at the workplace. After the elaboration of a strategic analysis and a short-term action plan the consultant supports the accomplishment using pedagogic material prepared to small enterprises. (see *Ministério da Educação and Ministério da Segurança Social, da Família e da Criança*, 2004) ⁽²⁷⁾.

The Austrian *Qualifizierungsberatung für Betriebe* (qualification consultancy for enterprises) is offered by the *Arbeitsmarktservice Österreich* (Austrian public employment service) and funded by the Austrian Federal Ministry of Economics and Labour (supported by ESF funds) for the period 2000-06 ⁽²⁸⁾. The programme consists of three operational measures:

- (a) *Qualifizierungsberatung zum Aufbau von JobRotation-Projekten* (qualification consultancy for implementing job rotation projects): the project provides the possibility for employees in the federal states of Styria and Upper Austria to participate in training measures while unemployed persons fulfil their tasks as proxies. Employers are supported in the framework of elaborating a JobRotation concept, a training plan for employees and job specifications and training plans for the proxy persons. Respective advice and consultancy of up to four days are covered by the Austrian public employment service and ESF;
- (b) *Qualifizierungsberatung zum Aufbau von Qualifizierungsverbänden* (qualification consultancy for implementing qualification networks): to intensify the know-how transfer between enterprises, facilitate training activities and safeguard employment Austrian public employment service and ESF fund advice and consultancy of up to four days if at least three companies of which at least 50% are SMEs want to establish a qualification network. Support may concern the establishment of a network management, the agreement on the common statutes, the identification of qualification needs within the network or the elaboration of a qualification plan;
- (c) *Qualifizierungsberatung für Betriebe* (qualification consultancy for enterprises) offers specialised consultancy to small enterprises (up to 50 employees) to find the most appropriate method for human resource management. The instrument aims at drawing up

⁽²⁷⁾ See also in Internet: <http://rede.iefp.pt/static/oqueue/default.asp> [cited 4.7.2007].

⁽²⁸⁾ See in Internet: <http://www.ams.or.at/neu/1347.htm> [cited 4.7.2007].

a target oriented educational plan for the employees of the enterprise during a consultancy of two days (maximum). In order to raise awareness of the Austrian companies for the measure, several promotional activities take place (such as presentations at company visits by the Austrian public employment service, pro-active telephone contacts with potential target companies, provision of information folders or advertisements in target group specific magazines).

The Swiss FormaConseil (active in the Canton of Geneva) constitutes a competence centre having been established by the government and the social partners to promote CVT at the workplace. It assists companies in the identification of training needs and the possible ways of covering them (including finding financial support possibilities), also with regard to assisting and advising the company in the implementation of specific measures in the enterprise. Since June 2004 businesses are offered the CD-ROM *Performances PME* free of charge, providing therewith a tool enabling the companies to analyse their competence needs as well identify corresponding training and financial support possibilities themselves⁽²⁹⁾.

A related project providing consultancy through employee-oriented coaching on training was the German *Leben und Arbeiten* (LeA – life and work) model, initiated by the association of trade unions⁽³⁰⁾. In the period 2002-05 it aimed at qualifying training coaches to assist low and medium skilled workers in developing their qualification, learning or career strategies.

5.4. Provision of modern instruments for workplace learning

Another type of support refers to the public provision or support of e-learning courses as these are seen to favour learning at the workplace due to their independency on time and location (also see Section 1). Norway, for example, is characterised by a long history of distance education. For example, the Norwegian information technology in open learning project originated in 1994 as a part of the European just in time open learning project and inspired in 1998 the creation of the Networked University (*Nettverksuniversitetet*) – a partnership among various Norwegian universities – aiming, among others, at facilitating lifelong learning in the workplace⁽³¹⁾.

Another example of such programmes including modules directly targeted at companies constitutes learndirect having been launched in 2000⁽³²⁾ by the University for Industry⁽³³⁾ in

⁽²⁹⁾ See in Internet: http://www.geneve.ch/ofpc/carrefour/conseil_formation.asp [cited 4.7.2007].

⁽³⁰⁾ See in Internet: http://www.dgb-boha.de/material/projekt_lea/ [cited 4.7.2007].

⁽³¹⁾ See in Internet: <http://www.nvu.no/> [cited 4.7.2007].

⁽³²⁾ Since then, 1.3 million learners have enrolled on a total of almost three million courses. More than 60% of the learners had not done any learning for at least three years before enrolling on their first course.

⁽³³⁾ By now, also the University of Chester, the University of Derby, the University of Central Lancashire, the Northumbria University, the University of Northampton, the University of the West of England, Bristol and Staffordshire University participate in learndirect.

the UK with a remit from government. The measure provides more than 550 courses (more than three quarter are available online) for the improvement of computer and office skills, self development, maths or English skills as well as a network of more than 2 000 online learning centres in England, Wales and Northern Ireland assisting the learners. Furthermore, the University for Industry runs a government funded national learning advice service⁽³⁴⁾ offering impartial information, advice and guidance via phone or its website on more than 700 000 training providers and a free careers and guidance service. learndirect also provides specific benefits for businesses⁽³⁵⁾. First, it initiated national vocational qualifications (work-related, competence-based qualifications reflecting the skills and competences needed to do a job) so that the abilities of the staff can be assessed at work and trained at a time and place that suits the employer. Second, the programme deals with upgrading numeracy and literacy skills of the workforce. Third, ‘learning through work’ enables working people to achieve recognised university qualifications without taking time off, tailored to their individual objectives, needs and framework conditions (e.g. possible learning periods). Learning through work programmes may, among others, include activities and assignments or projects at work, online and/or distance learning materials, university and college courses, personal or management development programmes undertaken at work in the fields of law, health and safety standards, software and computing, management and people skills or planning and finance. The University for Industry has developed separate approaches to working with small businesses as well as sector skills Councils and large employers to address their specific needs.

5.5. Cooperation among companies with regard to workplace learning

For businesses, the main purpose of in-company learning is often to develop firm-specific knowledge and skills, and businesses are also reluctant to share information and know-how with other companies. Nevertheless, this report has shown that experience in different contexts, for example different types of inter-company training, is conducive to learning. Furthermore, inter-company training systems can contribute to solve the lack of resources many SMEs face with respect to their engagement in competence development (also see Section 2). Public support (e.g. in the form of sector- or industry-level initiatives) can encourage business cooperation in the field of learning.

The Finnish workplace development programme TYKES (2004-09) is funded by the Finnish Work Environment Fund, the Occupational Safety Centre, the VETO programme of the Ministry of Social Affairs and Health, the National Technology Agency Tekes, the ESF and the TRIO programme coordinated by the Technology Industries of Finland and aims at

⁽³⁴⁾ This service was launched in 1998 and has taken more than 6 million calls and 12 million hits on the website since then.

⁽³⁵⁾ See in Internet: <http://www.learndirect-business.co.uk/> [cited 4.7.2007].

promoting the modes of operation of Finnish companies while simultaneously enhancing productivity and the quality of life of the employees (qualitatively sustainable productivity growth)⁽³⁶⁾. This is to be achieved by close cooperation between workplaces (i.e. management and staff of private and public entities whereby the focus lies on SMEs as well as welfare and health communities), researchers, consultants, public authorities and the social partners (triple helix model). The programme's forms of activity comprise the support of workplace development projects (e.g. improvements in employees' opportunities for development by focussing on human resource management), of method development projects (e.g. the potential of information and communication technologies in the work organisation), of learning networks and the dissemination of information on workplace development as well as the reinforcement of expertise on workplace development. Particularly the learning networks in TYKES (the applicants are typically research and development units) represent a new form of project activity, joining researchers and workplaces, the development of whose operations is supported by cooperation with external experts (e.g. consultancies, development agencies or regional actors). The purpose of the learning networks is to create new knowledge and expertise on qualitative sustainable productivity growth having wide applicability. Furthermore, it aims at learning and the creation and dissemination of new forms of cooperation at several levels. In the previous workplace development programme (1996-2003) 1 300 workplaces with 135 000 employees participated in about 700 projects. The evaluation results of the project (Pitkänen et al., 2003) show, among others, that by focusing on social innovation and with an emphasis on network building and companies' ability for learning and innovation the programme has followed a broad systemic innovation policy approach in a national context dominated by a technology-oriented view on innovation.

The Irish training networks programme is run by Skillnets since 1999⁽³⁷⁾. Skillnets was formed by industry stakeholders and is funded through the National Training Fund of the Department of Enterprise, Trade and Employment. It is an enterprise-led approach to training and development through supporting the development of flexible and effective training delivery methods among enterprises experiencing difficulties in accessing or benefiting from training. In each network (most of them are sector-based), companies come together (also collaborating with experts, trainers, certifying bodies, industry bodies, etc.) and individually decide on the training they need and on how, where and when it will be delivered instead of having to buy off-the-shelf products not addressing their specific needs. Therefore, company groups are enabled to manage their own training programmes which may, furthermore, be undertaken at times and locations that are convenient for them. Skillnets provides facilitation, information and funding to enable companies to deliver the solutions they feel are most appropriate to their size, sector and situation. As a result, this approach is particularly appropriate for SMEs lacking time, expertise and/or money to develop training tailor-made to their specific needs and directly relevant to their size and industry sector. By adopting a dual focus on both, businesses and employees, Skillnets enhances at the same time productivity

⁽³⁶⁾ See in Internet: <http://www.mol.fi/mol/en/index.jsp> [cited 4.7.2007].

⁽³⁷⁾ See in Internet: <http://www.skillnets.com/> [cited 4.7.2007].

and employability. This new approach has been enthusiastically welcomed by companies, staff, industry bodies, employers and trade unions. In total, since its establishment in 1999, more than 5 000 companies covering different sectors from pharmaceuticals and microelectronics to hotels and retailers have improved business competitiveness by up-skilling more than 30 000 trainees through Skillnets. The networks are provided funding for training purposes; in the second programme period (2002-05) about EUR 15 million were invested in Skillnets. Due to its considerable success, the programme's continuation until 2010 was announced in March 2005 (available budget: EUR 55 million). The funds are made available to the enterprise groups on the basis of competitive calls for proposals in 2005, 2006 and 2007. Also funding for engaging consultants to assist in the elaboration of the proposals is available.

5.6. Changes in the apprenticeship system

Inter-company training cooperation might be especially valuable for youth as they benefit not only from an enhanced training effect but gain insight into the processes and procedures of different enterprises and, therefore, more general experience compared to young people being limited to a single business. This seems particularly important if companies are serving niche markets and would only be able to familiarise their trainees with only a part of the skills generally needed on the specific labour market. Therefore, the Austrian *Berufsausbildungsgesetz* (vocational training law) provides the possibility of *Ausbildungsverbände* (joint training systems) in the field of apprenticeship training. The instrument is targeted at specialised companies wishing to train apprentices but being not able to offer the full range of competences foreseen in the training curricula (obligatory joint training system) as well as at companies wishing to equip their trainees with additional skills to be gained in partner companies (voluntary joint training system). From the organisational point of view the joint training system might take the form of an exchange/rotation of apprentices among companies, skills development in other companies against payment or participation in courses or seminars at training providers against payment. Potential additional costs (such as seminar costs) are to be borne by the employer who may, however, apply for public support. A similar instrument has been established in 1999 in the German region of Wilhelmshaven in the form of the GOLO project focussing on the needs of specialised SMEs. Generally, it can be concluded that through rotation of apprentices between different companies learning is enriched and learning opportunities are expanded. This provides apprentices the range of experience to acquire a comprehensive occupational profile.

Furthermore, a number of countries (Austria, Belgium, Czech Republic, France, Germany, Hungary, Iceland, Luxembourg, Malta, Poland, Slovenia, Sweden, Turkey) have been working on modularising the apprenticeship system during the last years (Leney, 2004). As an example, the intention of modularising apprenticeship training has been included in the Austrian government programme of February 2003. In the following, an amendment of the *Berufsausbildungsgesetz* (vocational training law) has been elaborated and became effective

in February 2006. In related occupations identical basic modules (lasting at least two years) are supposed to provide for a solid general education constituting the basis for the main training (at least one year) and specialisation modules (six months to one year).

Also the German government and the trade organisations DIHK, BDA, ZDH and BDI⁽³⁸⁾ have agreed on the *Nationalen Pakt für Ausbildung und Fachkräftenachwuchs* in Deutschland (*Ausbildungspakt*) (national pact for training and prospective qualified personnel in Germany (training pact)) to alter apprenticeship training in 2004. Thereby, the government promised a reform of the vocational training law while the associations are to offer the required number of apprenticeship training positions. In 2005, the *Gesetz zur Reform der beruflichen Bildung* (*Berufsbildungsreformgesetz*) (law to amend the vocational training) has become effective. Part 2 of the law deals with vocational training, including further education and occupational retraining. In order to enforce the internationalisation of vocational training the law now also provides the possibility to realise parts of the training abroad (not more than a quarter of the total education period) in the framework of exchange programmes. Other changes refer, for example, to the integration of module-based education with degrees for each level, auditing (e.g. possibility of passing parts of the final exams during the training period) or new forms of cooperation between companies and schools in the framework of the education programmes (including joint training systems). Furthermore, people can also be admitted to the final exam of the apprenticeship training without having participated in the regular training, if they are able to prove professional experience in the respective field of at least 1.5 times of the regular training period or provide certain certificates indicating the necessary skills and knowledge.

In order to facilitate the access to higher education for apprenticeship graduates, the City of Vienna financially supports a project dealing with a new education/training form called *Mit Lehre an die Fachhochschule* (with apprenticeship training to colleges of higher education). Since October 2005, the Viennese college of higher education FH-Campus Wien⁽³⁹⁾ together with Philips Austria prepares apprentices for the college of higher education to promote lifelong learning of the juveniles and equip them with better chances on the labour market. During the last part of the apprenticeship training the participants take additional exams for the college courses (e.g. in German, mathematics, English or the specific occupational field) entitling them to study at the college after having completed apprenticeship training. 50% of the preparation work for these exams takes place during working time and at the premises of Philips Austria. The costs for the exams are born by FH-Campus Wien and the City of Vienna. In total, about EUR 86 000 are spent during the five-year project duration.

⁽³⁸⁾ DIHK, *Deutsche Industrie- und Handelskammer* (German association of industry and trade)
BDA, *Bundesverband der deutschen Arbeitgeberverbände* (federation of German employers' organisations)
ZDH, *Zentralverband des Deutschen Handwerks* (German confederation of skilled crafts)
BDI, *Bundesverband der deutschen Industrie* (federation of German industries)

⁽³⁹⁾ See in Internet: <http://www.fh-campuswien.ac.at/> [cited 5.7.2007].

5.7. Visibility and measurement of informal learning

Non-formal and informal learning experienced outside of formal training provision is in many cases not recognised and rewarded by the labour market. Therefore, developing and implementing methodologies and systems for the identification, assessment and recognition of non-formal and informal skills can be seen as a tool for realising lifelong learning systems as it guarantees that learning efforts are credited and might contribute to learners' career paths independently of the settings in which the learning takes place. Furthermore, it also acts as a valuable motivator for the individuals as both further education and their work position might be based on their actual competences, not only their formal education (OECD, 2003). Most of the European countries have elaborated national policies on validation of non-formal and informal learning, taking the form of legal initiatives, of agreements between public authorities and social partners or even initiatives for better coordination of activities within the public sector (e.g. the *bilan de compétences* in France, the national vocational qualifications in the UK or the *realkompetanse* project in Norway) (Straka, 2004). Nevertheless, the policy formulation and implementation in the individual countries varies with respect to its development stage from experimental to emerging and the existence of permanent systems (Colardyn and Bjørnavold, 2005)

In this context, the *dispositivo de evaluación y reconocimiento de la competencia* (device for the assessment and recognition of competence) has been introduced in Spain in 2004 to formally recognise competence acquired through professional experience (IKEI, 2005). The measure is provided by the *agencia Vasca para la evaluación de la competencia y la calidad de la formación profesional* (Basque agency for the assessment of competence and quality of vocational training), a dependant body of the Basque Regional Government. The target group are persons aged 18+ with professional experience of at least two years wishing to obtain a certificate acknowledging their skills and competence and/or being granted the chance of receiving a vocational training degree.

In France in 2002 the *loi de modernisation sociale* (law of social modernisation) introduced the *validation des acquis de l'expérience* (validation of competences acquired through experience), enabling all professionally active persons to benefit from a competences audit to obtain a certificate or title⁽⁴⁰⁾. The validation of occupational experience is, therefore, formally equal to other proofs of competences (such as school or university certificates, apprenticeship training or the participation in formal VET). In the framework of the validation all competences gained by paid, unpaid or voluntary work conducted for at least three years and being directly related to the certificate to be attained are to be taken into account.

In Portugal, six pilot *Centros de Reconhecimento, Validação e Certificação de Competências* (centres for the recognition, validation and certification of competences) have been

⁽⁴⁰⁾ See in Internet: <http://www.umi.edu/> [cited 5.7.2007].

established in 2000 (by 2006 there should be 84 of them). The centres work in the framework of the national system for accreditation, ratification and certification of competences, covering a system of key competence benchmarks with directives on the process of recognising and validating four key competences, the methodology of assessing competences and a portfolio of personal competences.

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6. Conclusions for research and policy

The workplace plays a key role for the acquisition and development of vocational skills and knowledge of people. The vast majority of vocational competences is learned in work environments and through work experience. This is a growing trend, as the type of knowledge – tacit, holistic, behavioural – required in contemporary work systems, exposed to high competition and constant change, is best or only acquired through experience-based learning and in business settings. At the same time, the quality of skills of the workforce is a crucial determinant for the competitiveness, economic growth and living standards of Europe and its individual companies. It is, therefore, imperative that this form of learning is flourishing and meets today's and future challenges and demands. This is the responsibility not only of workers and employers themselves, but also of governments and society in general, as learning processes at the workplace entail strong positive external effects. This section discusses some indications for action at these different levels.

6.1. Understanding of learning at the workplace

Recent research on workplace learning and related concepts, in particular as far as conceptualisation and definitions are concerned, appears scattered. A number of analyses of components or forms of work-related learning do exist, addressing for example apprenticeship or CVT courses or developmental learning or work process knowledge, etc. However, what seems to be missing is an informative overview on what forms of learning and training are occurring in companies, which could be systemised, for example along the degree of organisation (or explicit and intended versus implicit and non-intended), developmental versus adaptive, behavioural versus cognitive. In addition, considerations on the statistical measurement of the various learning practices are required. This could form a starting point and reference frame for subsequent (empirical) in-depth analyses. Conceptual confusion is apparent in surveys on company-based training practices, where results are very sensitive to definitions and phrasing, and thus hardly comparable across surveys. This leads to the fact that, from the data at hand, a robust conclusion on the application of specific learning and training practices among European enterprises is difficult. Nevertheless, the following trends appear:

- (a) for all types of practices (formal or informal), activity increases with firm size;
- (b) SMEs have a clear preference for more traditional informal, work-integrated practices, however, courses with external trainers are also highly ranked;
- (c) more non-traditional informal practices (e.g. quality circles) are increasingly common in larger firms but rarely applied in smaller ones as well as different forms of inter-company practices are.

6.2. Raising awareness about implicit learning processes at work

The organisational design of work strongly influences the potential for experience-based learning in a company. However, in many (smaller) enterprises the management is not aware of the fact that such implicit learning happens every day nor that it can be influenced by how the work is organised. Awareness is the first prerequisite to encourage learning in the work process. Policy, which is currently much focused on supporting and promoting course-type of learning, could do a lot to raise this awareness and to provide advice (brochures, events, consultancy). The aim is not to suggest a one-size-fits-all model, but to provoke reflection about finding company-specific approaches. Therefore, some practical guideline for businesses, for example based on the factors discussed in this report, could be helpful in this respect. Moreover, an awareness raising strategy has to emphasise the business benefits connected to these learning effects (Fuller et al., 2003). This could be supported, among others, by way of case study research on the impact of different forms of work-integrated learning.

6.3. Promoting inter-company learning and training

Company-based training efforts are often intended to strengthen firm-specific skills and knowledge. Also a number of other reasons make businesses reluctant to engage in cooperative forms of training and learning (exchange programmes, job rotation across companies, etc.). Nevertheless, research shows that external contacts, new contexts and perspectives induce important learning effects. Policy has started to address this issue, but often the focus is on jointly organising courses (also to reduce costs). The scope of action could be extended to more innovative forms of inter-company learning, for example staff exchange, visits, projects with customers or suppliers, benchmarking.

6.4. Incentive structures for learning and knowledge sharing

Material or immaterial incentives for acquiring skills and knowledge can contribute to learning motivation and learning activities but have to be designed carefully. Career perspectives may be more important than money, and recognition and certification function as motivating factor as well. Companies should, however, also take into account incentives to overcome perceived disadvantages in transferring knowledge on the part of more experienced and senior workers, for example through rewarding mentoring or coaching activities.

6.5. Bringing elements of learning into work processes

Although work processes provide opportunities for competence development, this can be enhanced and made more effective by (semi-)structuring these processes or bringing in elements of intentional and organised learning. The latter refers to some modern concepts of combining work infrastructure and learning infrastructure, some of them are described in this report (e.g. learning islands). Presently SMEs use these concepts very rarely, partly because they do not know them and do not know how to implement them. Research and development should be done to adapt the models to the framework conditions of smaller firms. To disseminate information about these approaches could be part of the above mentioned awareness raising strategy. However, in many cases supporting learning effects is done through ad hoc tailor made practices and structures, as is illustrated by a few examples in this report. Making such examples known among the business community can initiate reflection and generate new ideas tailored to the own firm. Finally, bringing elements of learning into work processes also calls for a stronger emphasis on pedagogic and teaching skills of managers (not limited to instructors in the frame of the dual system). It may be useful to investigate further how to incorporate such competences in business manager education and training (e.g. curricula in business schools).

6.6. Barriers to training in SMEs: scarcity of time and lack of management expertise

Lack of time (on the part of employees) is the most important barrier to training activities for SMEs. Any training provider and any policy designer should take this into account. At the same time this is another argument for work-integrated learning where the worker would not leave the workplace. Another barrier is the lack of dedicated expertise in the management of competence development. This implies, for example, less systematic evaluation of employee performance and competences, training needs, as well as costs and benefits, and lacking training plans. Although this calls for consultancy and advice offered to SMEs to develop their management and quality systems, care should be taken to not over-regulate or over-standardise learning and training processes in SMEs by implementing costly systems with questionable validity and reliability. Enterprises should be aware that benefits of company-based competence development go beyond improvements in work behaviour, but extend to strengthening motivation, loyalty and commitment.

6.7. (Experience-based) learning at the workplace builds on initial formal knowledge/education

It is not realistic to regard informal learning at the workplace and experience-based learning as an alternative to explicit and formal knowledge transfer and to expect it to balance out differences in initial education. Analyses have shown that general educational level and

learning effects at the workplace correlate positively. A policy strategy seeing work-based or company-based learning as an alternative path to formal education is dangerous.

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Country codes in figures and tables

AT	Austria	LU	Luxembourg	HU	Hungary
BE	Belgium	NL	Netherlands	LV	Latvia
DK	Denmark	PT	Portugal	PL	Poland
DE	Germany	SE	Sweden	SK	Slovakia
GR	Greece	UK	United Kingdom	SI	Slovenia
ES	Spain	NO	Norway	BG	Bulgaria
FR	France	CH	Switzerland	RO	Romania
FI	Finland	CY	Cyprus	LT	Lithuania
IE	Ireland	CZ	Czech Republic	MT	Malta
IT	Italy	EE	Estonia	EU-25	European Union (25 countries)

List of abbreviations

CoP	Community of practice
CVT	Continuing vocational training
CVTS	Continuing vocational training survey
ESF	European Social Fund
EU	European Union
HPWS	High Performance Work Systems
SMEs	Small and Medium-sized enterprises
VET	Vocational education and training

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