Edgar Sauter
Head of Structure and Regulation in Vocational Training Department, Federal Institute for Vocational Training in Berlin/Bonn, Germany.

The risks and opportunities of learning on the job

The term work-related learning is used here to denote intervention by an instructor to design workplaces and working methods. Work-related learning brings with it a number of economic and pedagogical advantages as far as training is concerned. In its different forms, it is distinguished from conventional continuing training because it is multi-functional, serving not only to build skills, but also as an instrument for personal and organisational development. Further development of work-related learning requires greater clarity of how it and on-the-job functional learning relate to qualifications and skills on the one hand and their contribution to company development on the other.

Trends in work and the need to learn

The workplace as a place of learning and the concept of on-the-job learning are receiving growing attention, largely due to changes in the nature of work which create both a quantitative and a qualitative need to learn that cannot be adequately satisfied outside working hours. While providing greater scope for action and planning, post-Taylorist working structures also call for additional knowledge and skills to ensure the flexibility necessary for competitive production concepts - high-tech production, customer-orientation, short innovation cycles and the like - and its further enhancement through continuous learning (see table 1). Slogans such as "lean organization", "the learning enterprise" and "Total Quality Management" similarly have a number of implications as regards the need to learn.

Lean organizations make for broader responsibilities and give rise to an additional need to learn on the part of employees. The trend towards flatter hierarchies in lean organizations results in tasks being combined. Qualitatively different activities such as planning, execution, control and allocation of resources are linked together and entrusted either to individuals or to small groups. This creates a need to learn that is greater from both the qualitative and quantitative point of view. The introduction of group working and the use of project groups typical of lean organizations call for cooperation and communication between employees. In addition to specialist occupational skills this generates a need for broader core skills such as the ability to work with others, methodical working, and problem-solving skills.

The fact that lean organizations make for a growing need to learn does not, however, necessarily mean that the firms concerned invariably facilitate the learning processes involved. A whole series of indicators testify to learning being hampered because of the necessity for more intensive working, which means less time for learning and smaller workforces. Such obstacles to learning on the job result, for example, from:

❏ the growing trend to outsource certain tasks which has the effect not only of reducing the content of people's work and opportunities for learning but also of impeding the flow of information and cooperation;

❏ the just-in-time principle which reduces, if not wholly eliminates, preparation and hence also learning time;

❏ the growing use of teleworking which excludes a section of the workforce from informal communication and learning processes;

❏ the distinction made between core and peripheral workforces which generally assures core workers priority in access to training facilities.

The noticeable shift in the age and qualification structure of the workforce also enhances interest in continuing training. A longer working life means that innovation can no longer wait for the next generation to come along but will increasingly involve older workers. Training must therefore be specifically designed with the needs of older people in mind. And since their learning processes need cognitive and practical references, work-integrated learning and training methods are liable to be those most used. This will probably

also apply if in future the workforce is characterized by a larger proportion of well-trained people with higher educational qualifications.

Objectives and advantages of work-integrated learning

A number of educational and economic interests and objectives are bound up with and pursued in connection with work-integrated learning. The general intention is both educational and economic, namely rapid application of what has been learnt to cope with the growing volume of work and more stringent quality requirements.

Greater efficiency through more effective application

When work and learning are kept separate, difficulties can arise when an attempt is made to apply the knowledge and skills acquired in training courses in a practical work situation. This is especially the case when an individual has to try to do so with no further assistance from a skilled technician or trainer. Work-integrated learning, on the other hand, permits knowledge and skills to be acquired while they are actually being practised and exploited. This can help to avoid problems of putting theory into practice and a loss of efficiency through frustration, particularly when the subject-matter to be mastered is itself demanding, which is the case for a growing number of workers. Such familiar core skills as thinking and acting in context and planning, steering and controlling one's own work or the ability to think in the abstract and creativity, which previously tended to be confined to a few academic fields, have with the delayering of working structures now become relevant to almost every type of job. Developing such competences as well as the ability to build knowledge and skills on one's own account typical of learning organizations is not achieved by further training courses organized outside the firm, which merely serve to reinforce them. Motivated learning of this kind, the argument runs, needs to be rooted in the working structures themselves, which reflect the firm's corporate culture (Bergmann, 1996).

Table 1:
Trends in working conditions - implications for learning

Integration of tasks Flat hierarchy	Quantitative and qualitative increase of learning requirements
Group work	More co-operation and communication methodological and social competences
Outsourcing	Less contents-learning more difficult co-operation
Just-in-time	Reduced periods for learning
Teleworking	Less informal communication
Core workforce/peripheral workforce	Different forms to promote learning by employees
Changing age and qualification structure	Age-adjusted forms of furtherance of learning

Costs lower thanks to reduced release times

Firms expect further advantages from work-integrated learning in terms of improved efficiency because it solves the problem of applying theoretical knowledge in practice and because releasing employees to attend training courses outside the firm often poses problems for small and medium-sized firms especially.

A good two-fifths of firms (Weiss, 1994) have difficulty releasing employees to attend outside courses. Lean management, which reduces personnel, aggravates the problem further. Many firms therefore see the possibility of combining learning with work as a way out of the dilemma, especially since company restructuring frequently calls not just for the retraining of individual workers but of whole organizational units. Avoiding, or at least reducing, the need to release employees for training also does away with the need to pay compensation for loss of wages, which accounts for a very substantial 48% of continuing training costs (Grünewald and Moraal, 1996). How far external training costs in connection with work-integrated learning (for example for outside moderators or media) can be offset is a question that cannot at present be an-

"Work-integrated learning, on the other hand, permits knowledge and skills to be acquired while they are actually being practised and exploited."

Table 2:
Methods of work-related in-company training

Traditional methods of instruction at the workplace	Shadowing 4-stage method; "show how/do" Analytical instruction
Action-based forms of in-company learning	Work-based projects Working with a written guide
Group-oriented, decentralized continuing training	Quality circles Lernstatt (≅ training workshop) "Learning islands" "Find out and demonstrate" Job rotation
Individual work-integrated continuing training	...using conventional methods - Induction - On-the-job training Self-training on the job with computer-assisted learning systems Tele-learning on the job

Source: Severing 1994

"The term work-related training is used here to denote intervention by an instructor to design workplaces and working methods."

swered. Attempting to calculate the cost of work-integrated learning currently comes up against insurmountable difficulties of definition and recording and is therefore not considered worthwhile (BIBB/IES/IW, 1997).

Just-in-time and learning in leisure periods

Work-integrated learning has another important advantage from the point of view of employers in that it can be better tailored to their requirements in terms of time and content. This just-in-time function should also ensure greater employee motivation than the "training schemes for the masses" frequently offered by external training bodies. There is, therefore, much to indicate that more work-integrated learning can ensure greater learning continuity than sporadic external training courses. Another possible argument in favour of work-integrated learning from the employer's point of view could well be that more intensive on-the-job learning often results in the learning process being shifted to people's leisure time. This is the case, for example, with self-directed learning using various media, distance learning or supplementary phases of work-integrated learning for which the necessary peace and quiet is frequently not possible during working hours.

Improved access for the less skilled

Work-integrated learning has a number of advantages to offer for employees as well. Training is easier to come by than in the case of outside training courses, especially for specialists and those with no formal qualifications. Negative school experience, which often discourages those without formal qualifications from participating, is not a serious obstacle here. It would greatly benefit such employees if the skills obtained via work-integrated learning could be certified and used as credits towards the acquisition of generally recognized formal qualifications.

Forms of work-integrated learning (organized learning at the workplace)

Attempts so far to define and classify the different forms of on-the-job learning have not resulted in a uniform and generally accepted typology of learning methods. A wide variety of terms are used for learning on the job - including work-related learning, work-integrated learning, on-the-job training and learning by doing - and often synonymously. There is also a long list of subcategories and methods for on-the-job learning. A number of attempts have been made to put order into and categorize this multiplicity. Severing (1994) groups "Methods of work-related in-company training" under a number of different headings (see table 2)

The term work-related training is used here to denote *intervention by an instructor* to design workplaces and working methods. It is not left to chance to decide whether or to what extent workplaces are equipped so as to permit functional learning. Instead training plans and intervention by a trainer ensure that, with employees' learning abilities as the starting bases, progress is made towards acquiring the skills and competences needed for a particular job.

The Continuing Training Reporting System VI (BSW) of 1994 puts work-related training and its various subdivisions under the heading of informal continuing

vocational training, which also includes learning in one's leisure time. The BSW's results as regards informal training show that in 1994 52% of employed people in the 19 to 64 age group had used at least one of the "other forms of vocational training" mentioned in table 3 as a means of learning (BMBF, 1996).

The various categories of *informal vocational training* represent a mixture of methods which one may assume are aimed at triggering a learning effect. Carefully thought-out trainer intervention goes hand in hand with work organization and information measures. Functional learning through work is, however, not included. The findings show that traditional forms of further training tend to predominate while new pedagogically demanding concepts such as quality circles and the like are only relatively seldom mentioned.

The percentage of those taking part in informal vocational training is twice that of those attending training courses. The overall percentage of those benefiting from continuing vocational training is 60% because those attending training courses participate in other forms of training far more often than do those not attending courses. The separate breakdowns show that continuing training courses focus on people already in work. The differences in participation in informal training between the two groups are just as marked as in the case of course attendances. The results show among other things that:

❑ people employed in large firms take part in these types of informal training more than people in smaller firms, who traditionally tend to receive training from the firm on the job;

❑ there are considerable differences in the rates of participation between employees with a university degree and those with no vocational qualification;

❑ there are differences from one sector of industry and commerce to another but banks and insurance companies and the health sector head the attendance league for both formal and informal training courses.

The European FORCE survey on in-company training covered both continuing training in the strict sense of the term (courses and seminars) and in the broader sense - thus work-related training, information meetings and self-directed learning. Table 4 shows the percentages of participation by German firms and their employees in work-related training and its various subdivisions. The figures are based on a written survey of 9300 companies with more than ten employees.

These categories of work-integrated learning also involve a mix of in-service training and work organization elements. The figures quoted by firms largely confirm the replies given by employees in the BSW report. In other words, traditional methods of instruction and induction, in which instruction, information and continuing training can hardly be distinguished from one another, tend to predominate. New concepts such as job rotation and training workshops are comparatively rarely available and - with the exception of exchange programmes - also little used.

Table 3:
Informal vocational training 1994
(Information provided by employees at that time)

Reading relevant books and trade journals	33 %
Self-teaching by the "watch and try" method	23 %
Short forms of instruction e.g.lectures and half-day seminars	23 %
Instruction/induction by fellow-workers, superiors, etc.	16 %
Trade fairs and congresses	15 %
Self-teaching using various media	11 %
Organized visits to other departments within the firm	8 %
Quality/workshop circles, training workshops, group work	4 %

Source: Infratest Burke Sozialforschung (BMBF 1996)

Characteristics of work-integrated learning

Multifunctional instruments for personal and organizational development

The different forms of work-integrated learning constitute a heterogeneous bundle. What they have in common is that each is designed to influence or shape the rela-

"(...) traditional methods of instruction and induction, in which instruction, information and continuing training can hardly be distinguished from one another, tend to predominate. New concepts such as job rotation and training workshops are comparatively rarely available and - with the exception of exchange programmes - also little used."

Table 4:
Availability and use of subforms of work-related training

	Percentage of firms	Percentage of employees attending
Instruction at the workplace by superiors and skilled employees (coaching)	41 %	16 %
Induction to cope with technical/organizational changes or with the introduction of new technology	35 %	5 %
Induction of new employees	30 %	10 %
Exchange programmes with other firms	4 %	14 %
Job rotation	4 %	3 %
Training workshops	4 %	4 %
Quality circles	5 %	3 %
Self-directed learning using distance learning, audiovisual aids such as books and videos and computer-assisted learning	17 %	3 %

Source: Grünewald 1997

"(...) work-integrated learning may contribute, for example, to the continuing improvement of work results, employee involvement, organizational development and customer orientation, and also provide a means of information and control for managers or of determining training needs at both individual and company level. These functions are not secondary to the skill-building function but constitute the true core of work-integrated learning."

"Once the multidimensional nature of the different forms of work-integrated learning is grasped, the difference between it and conventional types of training becomes clear."

tionship between work and the learning process. This is true of instruction from fellow-workers just as much as for cooperation in quality circles. Also to be taken into account, however, is the fact that these measures and forms are in the main multifunctional - that is, they are not merely aids for in-service learning or skill-building but also serve as instruments for personal and organizational development and are essential elements of corporate culture.

It is especially this multifunctional aspect that distinguishes the different forms of work-integrated learning from conventional continuing training through courses and the like. Depending on a company's philosophy and management strategy, work-integrated learning may contribute, for example, to the continuing improvement of work results, employee involvement, organizational development and customer orientation, and also provide a means of information and control for managers or of determining training needs at both individual and company level. These functions are not secondary to the skill-building function but constitute the true core of work-integrated learning.

Different profiles and functions

Each of the various forms of work-integrated learning has its own particular profile as regards the functions mentioned. A survey carried out in 500 firms in Germany to supplement the European FORCE survey confirmed this (Grünewald and Moraal 1996).

Let us take quality circles as an example. It is clear that this form of learning was originally conceived as a means of improving the quality of products and services. In German companies it was used chiefly as a means of encouraging greater cooperation and boosting employee motivation. According to the people questioned in the various firms, quality circles are nowadays regarded especially as a means of improving the results of work (97% agreement) and employee involvement (83%). Job rotation, on the other hand, apart from being seen as a means of improving the results of work (83% agreement) was regarded mainly as a form of behavioural training (69%) and organizational development (67%). Overall, however, there is still considerable uncertainty as to what purpose continuing training plays in the growth of competence within a firm and of organizational and corporate development, especially since it is not clear how its contribution to corporate development can be determined (Staudt and Meier 1996).

Little formalization

Once the multidimensional nature of the different forms of work-integrated learning is grasped, the difference between it and conventional types of training becomes clear. Those responsible for the practical aspect of training agree particularly on the fact that work-integrated learning serves to extend knowledge and skills and requires the fixing of learning objectives and the use of computerized or audiovisual aids, as well as the involvement of superiors as trainers. There is far less agreement as to whether these forms of learning presuppose that the skills needed are systematically determined beforehand, a skill-building plan drawn up in writing and

that specially trained instructors are used. In the view of many practicians any feature tending to formalize learning as an independent form of skill acquisition runs counter to the whole idea of work-integrated learning (Grünewald 1997). Creating a system of certification for work-integrated learning would also fall into this category (BIBB/IES/IW 1997).

Working and learning

The different forms of work-integrated learning all lie somewhere between the two extremes of work and learning. We are struck by the fact that from the practical point of view there is no difficulty in classing individual measures more as learning or more as working. While self-directed learning is regarded more as learning and job rotation more as work, the opinions of those involved at the practical level in quality circles are not so clear. A good half see learning and just one half see work as the dominant factor (Grünewald and Moraal, 1996). How it is actually classified will probably depend on the company's own philosophy. If quality circles are seen more as a means of in-company training and of giving shape to working processes the emphasis will tend to be on the learning aspect, whereas if they are viewed more as a means of work organization which incidentally has a useful training function the work aspect will come to the fore.

Learning by doing (informal learning on the job)

Intentional and functional learning

Forms of work-integrated learning which, like job rotation, are viewed more as work, focus on changes in the workplace and general working conditions to foster the learning process, particularly from the behavioural point of view. Here the training aspect lies essentially in a calculated altering of work content and working processes and conditions. Such planned, organized and assisted learning on the job must be clearly distinguished from learning by doing, which unlike intentional learning is a functional learning process through which an individual passes when coping with the tasks and working conditions involved in his job.

Working structures encouraging or hindering learning

Research in the field of industrial psychology has repeatedly demonstrated that the nature of work and work structures as well as the working environment considerably influence the learnable content and the scope for learning offered by a job. Simply by making a job more demanding and with no need for training it is possible to increase the interest and motivation and influence the behaviour of the person concerned and, so long as they are not overstretched, can generate exactly the skill required. It has, for example, become clear that where Taylorist working structures exist and jobs are broken down into component parts that give workers little chance to influence and control their working conditions, motivation is low and developing skills almost impossible. Findings such as these have led industrial psychologists not only to analyse individual jobs from the point of view of learnable content but actually to produce guidelines for designing workplaces with a view to avoiding negative effects and enhancing more positive aspects (Münch, 1997).

When seeking to define or create structures to encourage learning one has to view matters in both a macroscopic and a microscopic perspective. The former relates to general conditions such as organizational structures, corporate culture, networking and cooperation between organizational units. The microscopic focus, on the other hand, takes in the potential learnability of tasks at each individual workplace (Bergmann, 1996). Conditions that encourage or hinder learning at the workplace can thus be described and demonstrated systematically (see for example the ideal training concept as outlined by Franke, 1982).

Group working

Group work in its various forms is one example of where learning by doing meets work-integrated learning as a form of training. In recent case-studies concerned with different forms of learning on the job the employers' representatives firmly classified group working as a form of work and not as a form of work-integrated learning. At the same time it became clear that the adoption of group

"Forms of work-integrated learning which, like job rotation, are viewed more as work, focus on changes in the workplace and general working conditions to foster the learning process, particularly from the behavioural point of view. Here the training aspect lies essentially in a calculated altering of work content and working processes and conditions."

"Work-integrated learning is almost always regarded as desirable from the educational point of view, yet broad areas of industry lack the basic conditions for putting it into effect. Taylorist working structures still persist and working and learning are largely kept separate."

working calls for complex learning arrangements including, for example, self-teaching, induction, job rotation and instruction by fellow-workers and others with a high level of skills. Use is also frequently made of more formal continuing training such as induction seminars (BIBB/IES/IW 1997). Putting the organizational principles of group working into effect (delegating responsibility to the grassroots, combining a number of tasks, and making the group responsible for co-ordination of work and cooperation) will probably create a greater need for work-integrated learning since the greater demands in terms of learning can only be met by more time for learning and more teaching aids.

Risks and opportunities

"In those areas where post-Taylorist work organization as outlined above has gained a foothold with all its consequences for the need to learn, the question that has to be asked in each case is whether lean organization, while providing scope for action and learning opportunities, does present an obstacle."

The many advantages of work-integrated learning and learning by doing should not blind us to the fact that this form of learning is only possible subject to the fulfilment of certain preliminary requirements.

Taylorist work structures hinder realisation

Work-integrated learning is almost always regarded as desirable from the educational point of view, yet broad areas of industry lack the basic conditions for putting it into effect. Taylorist working structures still persist and working and learning are largely kept separate. There exists neither a holistic structure of tasks nor the desirable self-directed cooperative acquisition of knowledge and skills involving a company's entire workforce. Although the empirical results of the FORCE study show that almost two-fifths of firms with more than ten employees offer some form of work-based training, this tends usually to be the more traditional instruction and induction, which frequently take the form of "Do it this way" and is concerned more with training workers to perform repetitive operations. More demanding forms of learning such as job rotation, exchange programmes and quality circles are still confined to a relatively small group of large firms and have often not progressed beyond the experimental stage, subject to the constant threat of what has been achieved being reversed again.

"All this tends to strengthen the belief that the acquisition of skills and competence by on-the-job learning has so far remained a mere vision demanded by theory but not yet translated into practice."

Outsourcing and continuing training

In those areas where post-Taylorist work organization as outlined above has gained a foothold with all its consequences for the need to learn, the question that has to be asked in each case is whether lean organization, while providing scope for action and learning opportunities, does present an obstacle. Increasing work intensity with its consequences for the time available to learn or outsourcing of work, which has the effect of reducing learnable content and preventing cooperation, pose a real threat to the advantages of work-integrated learning. Other dangers threaten when it is not simply specific jobs of work that are outsourced, but company training activity which is then bought in as required. In such cases training-assisted measures to encourage on-the-job learning are liable all too quickly to be done away with. When this happens, as it frequently does, even a system of group working previously introduced with considerable effort and expense can degenerate into a kind of democratic Taylorism (Severing, 1997). Another danger is that of learning by doing being reduced to the skills in demand at the time. Lean production, then, implies lean learning. This is particularly so when, for example, combining work and learning, as group working aims to do, is rendered more difficult or even impossible because the time needed for intra-group communication is reduced on grounds of cost (Frieling, 1993 and Markert, 1997).

Reduced access for the lower-skilled and unemployed

Against this background there is little chance of groups who, because of their lower educational level and occupational status, have been given little further training being given more opportunities to participate in work-integrated learning. According to the BSW findings, the group-specific differences found in the case of continuing training are repeated for work-integrated learning. All this tends to strengthen the belief that the acquisition of skills and competence by on-the-job learning has so far remained a mere vision demanded by theory but not yet

translated into practice (Staudt and Meier, 1996).

No practicable ideas for certification

In the circumstances it is understandable that even firms that actively encourage on-the-job learning hold back when it comes to the question of certification and accreditation of skills gained through work experience. Despite the positive attitude to work-integrated learning, certification by firms is in the main not viewed favourably and even the works councils and employees themselves see it as involving considerable problems (BIBB/IES/IW, 1997). This is only partly a matter of vested interests and due more to a lack of practicable ideas as to how the contribution made by the various forms of on-the-job learning to individual skill- and competence-building might be determined for certification purposes. Measures designed to develop core skills and competences pose a particular problem here.

Combining and linking forms of learning and venues

The potential of work-integrated learning and the workplace as a place of learning are limited by the fact that by no means all vocational learning objectives can be achieved on the job. Forms of learning and venues away from the workplace will still be needed for the time-consuming process of basic training. A variety of learning venues will also be needed for continuing training, for example, for courses leading to formal qualifications for career advancement. Work-integrated learning will make a useful contribution here, especially if experience gained at the workplace is accredited by certificate. However, the combination and interaction of several learning venues is necessary to balance out any one-sidedness in training on the job.

Exclusion of the unemployed

A further reservation attaches to work-integrated learning, namely that its benefits do not extend to the unemployed unless new models for acquiring skills on-the-job are devised to ensure their inclusion. Unemployed workers could, for example, be taken on as temporary replacements for employees on release. This has been the practice in Denmark for a number of years and has the advantage of enabling unemployed people to benefit from work-integrated learning while freeing permanent employees to take part in further training outside the company (Müller, 1994).

Outlook

Given the limitations and risks attaching to work-integrated learning, its further development is likely to be as follows:

Transparency of the contribution of work-integrated learning

Work-integrated learning in its various forms should be further developed because of the manner in which it interacts with the work process. Traditional forms such as instruction and induction have a relatively marked information, instruction and instruction content at the expense of opportunities for independent practical working. In forms of training such as quality circles that put the accent more on group learning, the emphasis tends to be on organizational and corporate development and its role in individual skill-building and development of abilities is still very unclear. This makes it difficult to devise practicable means of developing and certifying skills based on work experience. Efforts should be made to clarify how different forms of learning interact and the learning objectives, skills and competences best attained through them.

The connection between general working conditions, such as organizational structure and corporate philosophy, and the specific tasks to be performed on the one hand and the skills acquired on the other also needs to be defined in the case of functional learning. This would make it possible to ascertain which work structures favour and hinder the learning process and possibly even to draft a typology of work structures and tasks and their implications for skill-building and corporate development. The overall contribution of work-integrated learning and learning by doing to corporate development needs also to be clarified. This could be done, for example, by analysing the figures for absenteeism, frequency of complaints, the

"The potential of work-integrated learning and the workplace as a place of learning are limited by the fact that by no means all vocational learning objectives can be achieved on the job. Forms of learning and venues away from the workplace will still be needed for the time-consuming process of basic training."

"The relationship between work-integrated learning and other learning forms also has its relevance for education and training policy. The interest in dual structures at all levels from initial and continuing training up to tertiary education shows that work-integrated learning cannot replace other training forms and venues but can only complement them."

suggestion scheme, quality assurance and learning objectives from manual skills to creativity.

A networked training system

The relationship between work-integrated learning and other learning forms also has its relevance for education and training policy. The interest in dual structures at all levels from initial and continuing training up to tertiary education shows that work-integrated learning cannot replace other training forms and venues but can only complement them. In addition to combining on-the-job training with formal training one should think about creating a network of learning and training facilities that would include the workplace, leisure time and the media. Learning arrangements could combine formalized learning in training centres, work-integrated learning, incidental learning on the job and self-directed learning in one's leisure time (Sauter, 1997). A network of this kind would create new opportunities for those interested in further training to plan their training themselves. On the other hand, it would also generate new problems of coordination when learning venues stand unconnectedly alongside one another, owing to the differing transparency of the modular courses on offer, counselling and quality assurance.

"A matter of crucial importance is the possibility of combining formal and informal learning with a view to obtaining a formal qualification at further training or university level. The need for it finds expression in all the talk of reform and the projects for the reform of vocational training and for lifelong learning currently being put forward."

A matter of crucial importance is the possibility of combining formal and informal learning with a view to obtaining a formal qualification at further training or university level. The need for this finds expression in all the talk of reform and the projects for the reform of vocational training and for lifelong learning currently being put forward. It is reflected, for instance, in the additional qualifications that would render the transition from initial to further training more flexible and which could be acquired during or immediately following basic training in various ways. Firms, vocational schools, training bodies and other responsible bodies would certify these additional qualifications, thereby making them clear and acceptable to the labour-market. Formal and informal qualifications should also be combinable so as to provide access to higher education and career advancement. The vocational training reform project (BMBF 1997) seeks to ensure that in future additional qualifications, further training modules and skills acquired on the job are given more weight when deciding on a person's suitability for further education and training.

Summary

Post-Taylorist trends in work organization reduce the degree to which work is split into component elements and favour lean organizational structures with tasks being combined and flat hierarchies. The growing need for both broader and deeper vocational training can no longer be met solely by organized formal training away from the workplace. The consequences of lean organization for on-the-job learning are not wholly positive since increased working intensity cuts into learning time.

Work-integrated learning brings with it a number of economic and pedagogical advantages so far as training is concerned. By combining learning with the practical application of what has been learned, it offers an almost ideal solution to the problem of transition from theory to practice, enhances efficiency and reduces costs because of the lessened need to release people for external training courses. For those groups of workers who traditionally have benefited less from education the barriers to their taking part in learning processes and continuing training have been lowered.

Work-integrated learning is not the same as continuing training within the firm, the most frequent form of continuing vocational training. Forms of informal learning at the workplace and on the job are evolving alongside more traditional methods such as in-house and external training courses and seminars. They lie somewhere between the two extremes of work and learning and the terms used are not standardized but vary with company philosophy and management strategy, even though they relate to the same or very similar things.

A distinction must be made between functional learning by doing and the forms of work-integrated intentional learning, based on in-service measures. As far as the present practice and use of work-in-

tegrated learning is concerned, employers and employees are largely in agreement that traditional forms of learning still predominate, particularly instruction by superiors or fellow-workers and induction. More recent forms of training such as quality circles, exchange programmes, job rotation and self-teaching are as yet not widely used.

The various forms of work-integrated learning are multifunctional instruments for personal, organizational and corporate development. In addition to developing skills they may, depending on the type of learning involved, help to improve employee involvement, quality assurance, customer-orientation or organizational development. This multidimensional approach makes it undesirable from a company point of view that they should become too formalized a means of qualification.

Functional learning through work is subject to conditions at the workplace that may either help or hinder the process. We must make a distinction here between general conditions at organizational level and the potential learnability of job content. Even incidental learning while on the job is often only possible when - as in the case of group work - organizational measures are taken that also include flexible learning times.

Functional and intentional learning at work requires work structures that make no strict demarcation between working and learning. Such structures do not (yet) exist in many areas of company operations. And even where lean organization with increased learning opportunities have been adopted, the consequences for learning are ambivalent.

A greater working intensity reduces time available for learning; outsourcing (including teleworking) makes it more difficult to obtain information and hampers cooperation. Concentration on the core workforce impedes access to learning for those on the periphery and excludes the unemployed. All this renders the demanding learning objectives set for work-integrated learning unachievable. Instead there is a risk of “lean learning”.

The further development of work-integrated learning involves considerations both of methodology and education policy. Greater clarity is needed in the case of both work-integrated learning and functional on-the-job learning regarding how they relate to qualifications and skills on the one hand and their contribution to company development on the other (statistics could be used for this purpose).

In the sphere of education policy it is a matter particularly of developing models for linking formal and informal learning into a network. This will involve a rethinking of the course of a person’s life, training and professional career, wage-earning activity and leisure time so as to allow for the need for lifelong learning.

Bibliography:

Bergmann, B. (1996): Lernen im Prozess der Arbeit. In Kompetenzentwicklung ‘96. Strukturwandel und Trends in der betrieblichen Weiterbildung. Münster, New York, Munich, Berlin, pp. 153-262

BIBB/IES/IW (1997): Formen arbeitsintegriertes Lernens. Möglichkeiten und Grenzen der Erfassbarkeit informeller Formen der betrieblichen Weiterbildung, published by BMBF, Bonn

Federal German Ministry of Education, Science, Research and Technology - BMBF (publ.) (1996): Berichtssystem Weiterbildung VI. Bonn

Federal German Ministry for Education, Science, Research and Technology - BMBF (publ.) (1997): Reformprojekt Berufliche Bildung. Cabinet decision of 16.4.97

Franke, G. (1982): Qualitätsmerkmale der Ausbildung am Arbeitsplatz. In BWP 4/82, pp.5-6

Frieling, E. (1993): Personalentwicklung und Qualifizierung - neue Ansätze und Probleme. In: Loebe H/Severing, E.(ed.): Mitarbeiterpotentiale entwikkeln - Erfolgsfaktor für die Wettbewerbsfähigkeit der Unternehmen, Munich

Grünewald, U. (1997): *Formen arbeitsplatznaher Weiterbildung. Ergebnisse der europäischen Weiterbildungserhebung.* In Geissler, K.A./v. Landsberg, G./Reinartz, M. (ed.): Handbuch Personalentwicklung und Training, Cologne (Looseleaf publication)

Grünewald, U./Moraal, D. (1996): *Betriebliche Weiterbildung in Deutschland, Gesamtbericht - Ergebnisse aus drei empirischen Erhebungsstufen einer Unternehmensbefragung im Rahmen des EG Programms FORCE*, Bielefeld

Markert, W. (1997): *Gruppenarbeit in deutschen Industrieunternehmen. Entwicklungsstand und Qualifikationsanforderungen*. In: BWP 3/97, pp.3-9

Müller, K. (1994): *Berufliche Weiterbildung: Das Beispiel Dänemark.* IAB Werkstattbericht No.13 of 16.12.1994

Münch, J. (1997): *Personal und Organization als unternehmerische Erfolgsfaktoren*. Hochheim a.M.

Sauter, E. (1997): *Aufstiegsweiterbildung im Umbruch. Neue Impulse und Konturen für die berufliche Weiterbildung.* In: Dobischat, R./Husemann, R. (ed.): Berufliche Bildung in der Region. Berlin (being printed).

Severing, E. (1994): *Arbeitsplatznahe Weiterbildung. Betriebspädagogische Konzepte und betriebliche Umsetzungsstrategien*. Neuwied, Kriftel, Berlin

Severing, E. (1997): *Arbeitsplatznahe Weiterbildung.* In Geissler, K.A./v. Landsberg, G./Reinartz, M. (ed.): Handbuch Personalentwicklung und Training, Cologne (Looseleaf publication)

Staudt, E./Meier, A.J. (1996): *Reorganization betrieblicher Weiterbildung.* In Kompetenzentwicklung '96. Strukturwandel und Trends in der betrieblichen Weiterbildung. Münster, New York, Munich, Berlin, pp.263-336

Weiss, R. (1994): *Betriebliche Weiterbildung*, Cologne