Company-based learning in the context of new forms of learning and differentiated training paths

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Company-based learning in the context of new forms of learning and differentiated training paths

Peter Dehnbostel, Gisela Dybowski

Abstract
It is widely agreed that education and, in particular, vocational training should enable young people to design their careers and their working and employment conditions. Individuals must learn to cope with open processes and uncertainties and to take decisions on their educational pathways. In a general perspective, vocational training has to be extended to cover larger periods of working life. The continuous updating of knowledge and abilities is a challenge for an increasing number of workers.

The results of OECD’s VOTEC project reveal a common educational strategy in a number of countries, by increasing both ‘flexibility’ and ‘differentiation’, e.g. by creating fluid transitions from training to work or to continuing training and by implementing approaches to improve transparency on training opportunities. These are the strategies which have to be considered when creating an autonomous and equivalent vocational education and training (VET) system.

At the enterprise level, principles of linking learning and work are gaining ground to improve the quality and development of vocational training. Approaches to connect work and learning, to integrate experiential learning, informal learning and intentional learning and to foster self-organised learning are becoming important.

New forms of organisation, work and learning within enterprises could improve and link in-company learning with school-based learning and higher education. The concept of ‘learning enterprises’ leads to more demanding forms of learning than is the case with traditional enterprise training activities. However, the relevance of firm-based learning for the modernisation of vocational training and for a closer link between education and work has always to be measured against its realisation of new forms of learning and whether these are considered as a core competence of firms. This includes knowledge management, i.e. the question of how to identify new knowledge and how to integrate it in the production process.
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Overview

It is widely agreed today that education and, in particular, vocational training must put young people in a position to play an active part in shaping their own career development paths and their own working and employment conditions. For, in times of rapid change, it becomes ever harder to predict the future with any certainty. Hence those concerned must learn to deal with open-ended processes, to cope with uncertainty, and to take decisions about their own training paths. Vocational training will increasingly extend across lengthy phases of working life, in order to cope with the challenge of ever greater pressure of competition in trade and industry, science, technology, communications and cultural life, because constant updating of knowledge and skills is a requirement faced by ever greater numbers of workers.

This need for lifelong learning, which is currently arising in similar form in all advanced industrial nations, is also becoming increasingly important in the debate on the restructuring and reform of national vocational training systems in Europe. In this context, comparable problems are crystallising, over and above particular characteristics of national vocational training systems. It can currently be seen that in many European countries a formal initial qualification is becoming increasingly important for access to the labour market; its level is also rising, and its content is becoming broader. However, rapid changes in economic, technical and social conditions are making it difficult to make vocational training ‘fit’ employment. National standards are too general for this, or they are adapting too slowly to be able to meet the relevant requirements in good time. On the other hand, vocational training is unattractive because of inadequate career paths. This brings with it the risk of further reinforcement of trends towards ‘mediocratic’ training.

This is because as long as young people or young adults fear that entering initial vocational training will take them into a blind alley, as regards other training options and future working careers, they will prefer to follow academic educational paths. Conversely, if education continues to expand, companies will tend to avoid a worsening of the standards of potential applicants by giving preference to young people with a higher level of general educational qualifications, as very clearly demonstrated, for example, by the trend in France (cf. Koch 1998a, p.336).

To counter these trends towards ‘mediocratic’ training, which in the past were not only widespread in France but have also had an effect in other industrialised countries in Europe, there is an urgent need to replace existing vocational training structures and develop new ones. The question is whether this transformation process can be controlled by policy, i.e. channelled in such a way that the traditional links between the systems of general education, vocational training and employment can be broken down and that stabilisation and development of vocational training can be assured.

In a project that ran from 1991 until 1994, ‘The changing role of VOTEC’, the OECD carried out a detailed study of the question of the capacity of vocational training systems to respond to socioeconomic structural change. Although the OECD project was essentially based on national reports, but not on systematic comparisons, the results of this project and the discussions at many European conferences and seminars (cf. OECD 1994; Koch and Reuling 1995; Fraunhofer-Gesellschaft 1996 etc.) revealed that the thrust of education policy in many European countries was moving in the same direction: key answers are being sought via an increase in the capacity of systems to respond via increased flexibility and in a new quality for vocational training via ‘differentiation’.

As outlined in section 1, the objectives of increased flexibility and differentiation are being pursued by means of a variety of tools, depending on the architecture of the relevant systems. An attempt is being made to reorient vocational training policy to create more fluid transitions from vocational training to employment or continuing training, and to work towards more uniform procedures that will make access to the range of training avail-
able more transparent. This involves simultaneously setting out fundamental development prospects, which need to be debated with the aim of achieving an equivalent independent vocational training system.

Below the level of structural approaches and tools aimed at differentiating and individualising vocational training, at company level principles of linked learning and work are becoming ever more important to the quality and further development of vocational training. These trends, described in section 2, are based on changes in work, which are primarily due to the introduction of new corporate concepts and the associated corporate reorganisation and restructuring. As a result of new corporate forms of work and learning, wide-ranging changes are looming for vocational training practice and research, and are of crucial importance as regards the future prospects of initial and continuing training.

As the relevant features of these forms of learning show, there are considerable differences in their aims, structures and level of dissemination, yet they combine working and learning in a systematic way, over and above learning by experience.

Approaches involving greater integration of learning by experience, informal learning and deliberate learning are becoming important in the context of vocational training in companies, as we show in section 3. Here, a theory of learning is defined and these concepts are categorised in the context of other types of learning and knowledge in companies. As many recent surveys have shown, independent learning has an important place in the context of new forms of learning. The possibility of increasingly combining, with the aid of independent learning, informal learning experiences from all areas of life with organised learning experiences in vocational training and continuing training is not only likely to create a new impetus for learning, but is also proving to be a better route, specifically as regards new forms of learning.

New forms of organisation, work and learning in companies involve the assumption that it is now easier than it used to be to achieve improvements and create possible links between learning in companies, in schools and in the higher-education sector. For the idea of the ‘learning company’ involves concepts of learning more demanding than those that have hitherto characterised vocational training and continuing training activities. However, according to the prospects set out in thesis form in section 4, the value and importance of company training work to modernisation of vocational training and to closer dovetailing of the training and employment systems will increasingly be measured in accordance with the extent to which it is actively involved in the development and dissemination of new forms of learning and makes this its core competence. This core competence will then also include the structuring of knowledge management, i.e. the question of how new knowledge is identified and incorporated into the relevant processes.

1. Framework conditions for forms and quality of learning

Education and vocational training systems are today increasingly expected to be responsive as regards new forms of greater flexibility and individualisation. Differentiated solutions are required in order to realise and implement these aims, owing to the different education and training systems in Europe. There is extensive agreement on the subject of creating links and a high level of interchangeability and of developing vocational training into a transparent overall system. In this context, the European debate is attaching increasing importance to requirements and approaches such as:

- closer dovetailing of initial and continuing training;
- expansion of modular, flexibly designed skills training paths;
- models combining qualifications obtained through vocational training and general education (dual qualifications);
- expansion of vocational training options via ‘supplementary qualifications’ facilitating individual routes to vocational development.
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Their particular contribution to the modernisation of education and training is seen as lying in the fact that these tools make vocational training more attractive and raise its status in relation to general education.

The common challenges outlined underline the urgent need for vocational training research at European level, which relates to overall transnational issues and can provide an innovative impetus for the further development of vocational training, via comparative research. A number of transnational projects recently implemented or currently in progress (cf. Koch 1998a; Reuling 1996, 1998a; Manning 1996a, 1996b; Hanf 1999) are providing initial information on concepts and tools for distinguishing vocational training courses and individualising the range of training available, as regards current practice in the European Union. Here, important aspects are instruments for modular training, dual qualifications, supplementary qualifications or relevant equivalents applied by national policies.

We must briefly outline what we mean by the terms on which we shall be focusing in the remainder of the text: ‘individualisation’, ‘differentiation’ and ‘increased flexibility’. Individualisation describes the increasing reference to the various capacities, inclinations and interests of individuals, in place of traditional ties and standards. Individuals are increasingly determining their own life and career plans and are themselves responsible for them. In the case of vocational training, individualisation means recognising the differing training and skills development of every individual, and gearing skills concepts or programmes to this. This involves differentiating training and skills training, and here a distinction must be made between ‘internal’ differentiation (e.g. the method involving working in small groups) and ‘external’ differentiation (e.g. new training courses). More generally, differentiation should be seen as expressing the service and knowledge-based society that is developing, and at the same time it is a typical feature distinguishing the latter from the comparatively clearly and transparently ordered structures of the industrial age. Lastly, increased flexibility describes the creation of structures and processes in such a way as to make it possible for persons and systems to react rapidly to unforeseeable developments, changes and requirements. At the same time, increased differentiation may lead to the development of increased flexibility. This applies to only a limited extent to measures involving external differentiation.

1.1 Individualisation and differentiation of vocational training and development paths - specific national examples

The following review of structural approaches to differentiating and individualising vocational training relates to an evaluation of research in the United Kingdom, the Netherlands, France, Germany and Denmark.

United Kingdom

In the United Kingdom, individualisation and increased flexibility have long been the basis of education and training organisation. Formal open access to different qualifications and fields of employment is part of the national system. Characteristic of this is the integration of vocational training of young people and adults: levels of vocational qualifications are distinguished from standards, and can be achieved in the context of both initial and continuing training. Two recent developments are worthy of note: the introduction of general vocational qualifications (GNVQs) and modern apprenticeship. Both can be seen as a response to criticism of the NVQ system, qualifications that were little used because of their high level of specialisation (Reuling 1996).

The GNVQ programmes provide individuals with a basis for broad occupational fields and for access to further education. In principle, it is possible to enter the employment system direct, with no formal qualifications. GNVQs make the transition easier, but still necessitate lengthy periods of vocational adjustment. In order to establish a link with the skills required in the workplace, combinations involving NVQ units - as ‘supplementary qualifications’ - are recommended. ‘Modern apprenticeship’ is a programme created to
reinforce work-oriented learning paths. It is essentially based on level ISCED 3 NVQs. Within this framework, additional units above this level can be selected. In the case of both GNVQs and modern apprenticeship, key qualifications are offered in separate learning units, in order to ensure a transfer of vocational competences and skills.

In 1996, an expert committee set up by the British Government put forward a national skills framework, relating qualifications obtained in general education and vocational training to one another and establishing formal equivalents according to levels of difficulty. Within this reference framework, at horizontal level the various qualifications are assigned to one course of general education and two courses of vocational training.

In the past, the individual courses of education and training in England were developed in isolation and at different times, so that this qualification framework constitutes the first quasi-official outline of a coherent system of education and vocational training. This statement must be qualified by adding that the qualification framework relates only to qualifications for 16-19-year-olds, which covers the acquisition of qualifications at levels of difficulty 1, 2 or 3 (Reuling 1998a).

In this system, the acquisition of GCSEs, certificates obtained at 16 on completion of stage 1 of secondary education, constitutes the typical point of transition to the various training paths. The question of which of the three educational paths, at which level, holders then embark on is largely dependent on the number of subjects passed and grades obtained at GCSE level. It is important to note that young people aged 16 or over have the opportunity to increase the number of subjects passed and/or average grade, in order to improve their chances of access to relevant courses leading to general or vocational qualifications at the various levels.

In this system, the vertical qualification paths are clearly mapped out. Five GCSEs (i.e. certificates in five different subjects) with grades of A to C are sufficient to take courses leading to AS (advanced supplemen-
tary) and A (advanced) levels, roughly equivalent to the German Abitur. This system also provides for horizontal qualification paths. For example, it is both possible and reasonably common for people working towards a GNVQ to obtain, at the same time, general qualifications in individual subjects (GCSEs or A levels). In this way, they can supplement their GNVQ or repeat examinations for general qualifications in order to improve their grades. They can then decide whether they wish to obtain further general qualifications or general vocational qualifications (Reuling 1996, 1998a).

In principle, there is also open access to the various NVQ levels. Trainees can enter at any level and seek to acquire the relevant NVQ. In practice, however, there are some problems in going up from second to third level NVQs, one reason being that in general NVQ qualifications are designed to relate to very specific occupations, and do not take account of the importance of acquiring broad vocational background knowledge. Therefore it is likely to be more difficult to implement horizontal qualification paths from GNVQs to NVQs, because there are very clear differences between the purposes of the relevant qualifications (general vocational knowledge and skills in school-based courses versus occupation-oriented skills preferably acquired in companies).

Moreover, it is also difficult for elements of different training paths to be made interchangeable because, under the current system, the examination units and qualifications in the various educational paths are structured in very different ways. This means that there is only limited scope for combining examination units from different educational paths in the sense of an integrated or mixed curriculum (Oates 1998), and reduces the room for manoeuvre as regards individualising training paths.

The Netherlands

In the Netherlands, a new law on adult education and vocation training (WEB) was introduced in 1996. This law sets out to structure various forms of vocational education and
training and adult education in a more coherent fashion (van Lieshout 1997; van Cleve 1998). Its core consists of provision for a uniform national structure of vocational qualifications, based on four levels of difficulty as regards jobs and four related training levels. The criteria for a job's level of difficulty are the extent of the responsibility borne by an employee, the complexity of the job and the extent to which it is transferable to different situations.

At each training level, courses leading to a vocational qualification are offered. Their duration is laid down in accordance with the number of years it takes a participant on average to acquire a certificate, with each year representing 1,600 hours of real learning time (theoretical/practical instruction, homework, examinations). Ultimately, the level of qualifications for admission, which are laid down for access to each level of difficulty, is the determining factor as regards the concrete length of the course taken to achieve a vocational qualification at the various levels. There are currently a total of some 700 vocational qualifications at the various levels of difficulty, designed and supervised by the 22 sectoral organisations (LBO - Landelijke Organe Beroepsonderwijs [national vocational training authorities]). The State regards public responsibility as consisting in ensuring that over and above profiles of requirements in individual sectors of the economy, account is taken of developments affecting companies in general, i.e. that the principle of ‘professionalism’ is applied, and that when vocational qualifications are established, it is ensured that they have labour market relevance (Reuling 1998b).

Every vocational qualification consists of a number of part qualifications, which are described as learning objectives or workplace-oriented skills. The options for combining individual part-qualifications are limited. The majority of them are compulsory qualifications, with a minority being optional. However, it is planned to offer more supplementary qualifications at the higher levels of difficulty, equivalent to the level of specialised institutions of higher education. There are clearly defined entrance requirements for the acquisition of vocational qualifications or part-qualifications at the various levels of difficulty, as well as options for transition to higher levels of difficulty or training courses (including the level of specialised institutions of higher education).

Every part-qualification involves a certificate based on tests, which may be implemented in a variety of ways (internal, external, internal with external legitimation via a State-recognised test body). External legitimation of certification is stipulated for 51% of part-qualifications. As a rule, this relates to those part-qualifications that cover the core of the occupation. A quality assurance system is laid down both for external test bodies and for regional vocational training centres. However, companies can also carry out tests by agreement with the vocational training centres, with the certificates being issued by the latter.

The concept of part-qualifications in the Dutch system has two aims. Firstly, trainees who switch to another form of training or break off training prematurely obtain certificates for elements already completed, in which they have passed a test. Secondly, the combining of different part-qualifications is intended to create more of a distinction between qualifications and thus make it easier to enter the labour market. Hence, in addition to a modular approach, the new WEB also attaches particularly great importance to the so-called regional training centres (ROCs) (cf. Kutscha 1999). On the one hand, this is a question of institutional integration of the players into a regional network developing qualifications structures and, on the other, this involves mutual coordination of the content and organisation of training courses ‘on the spot’. It is hoped that this regionally based infrastructure will improve links between the education and employment systems, with its greater decentralisation, reinforcement of the autonomy of regional and local players, and enhancement of the room for manoeuvre of players in the private sector.

As yet, little can be said about the results and effects of the new structures, as the law on adult education and vocational training has
been in force only since January 1996. However, it can be assumed that the regulatory framework now in place will be able to bring about significant innovations in vocational training, particularly in terms of increased flexibility and differentiation within the system and as regards its orientation towards the external situation. In this context, the concept of creating modules must be seen as an element of a strategy of political innovation.

**France**

In the past, the French education system was characterised by the fact that once a vocational training path had been embarked on, either by choice or owing to problems at school, this largely determined the future educational path pursued and hence also future options for vocational development. Against the background of the efforts made in recent years to make vocational training more attractive to better pupils also, formal interchangeability within the education system has been significantly expanded.

To facilitate transition between the vocational and general branches of secondary education (stage II), 'bridging' classes (premières d'adaptation) have been established at the upper stage of secondary education, to make it possible for holders of a BEP (diploma in occupational studies) to achieve a technological or general baccalaureate. However, major hurdles have to be cleared before the transition can be effected, as virtually no account is taken of previously acquired knowledge (Chalendar 1988, p.148). As a side effect of the need for school achievements to be comparable and capable of being taken into account with respect to the transition between general, 'technological' and vocational education paths, vocational training has been more strongly integrated into the logic of the functioning of the overall school system.

Since 1985, there has been a training course following on after completion of training as a skilled worker, leading to a dual qualification, the vocational baccalaureate. In addition to this form, which is akin to further education, the vocational baccalaureate can also be acquired in the context of phased skilled worker training, and apprenticeship in particular. It is intended that it should be possible to acquire all vocational training qualifications up to and including the vocational baccalaureate via differentiated raising of training levels, in apprentice training centres (CFAs) in particular. The training course leading to the vocational baccalaureate is combined with a significant company-based element (16-20 weeks of the two-year training period). This corresponds to the principle of alternation, under which systematic/school-based training and practical instruction in the workplace are combined (Rothe 1994). Training is divided into 25 different subject areas (1991) and includes a programme based on fundamental general subjects: history, geography, mathematics, French and economics.

The training path may also extend beyond the level of secondary stage II. Specialised study (in sections de techniciens supérieurs [STS - advanced technician departments]) at lycées d'enseignement général et technologique [colleges of general and technological education] leads to the BTS qualification (brevet de technicien supérieur - advanced technician's diploma), and at instituts universitaires de technologie (IUT - university institutes of technology) a diplôme universitaire de technologie (DUT - university technology diploma) can be obtained. However, holders of the vocational baccalaureate face strong competition from holders of the general or technological baccalaureate for admission to these highly selective training courses. Moreover, those who have followed the vocational training route run an extremely high risk of failing owing to the major theoretical demands these courses make. If several successive qualifications are obtained, much of the content is repeated at the next higher level, because previous work is not taken into account.

In the past ten years, a number of measures have been implemented in an attempt to individualise vocational training and make it flexible, over and above the State system. Individualisation has fundamentally been promoted by:

- the extensive introduction of modules into programmes following on from State school
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- Training, facilitating flexible acquisition of qualifications;
- The development of teaching software for individual, autonomous use;
- Intensive counselling on vocational training.

An essential tool for increasing flexibility is the option, backed by legislation, of validating knowledge and occupational experience and accumulating credits for this, in order to obtain a qualification in stages. Finally, regulations have been put in place for taking account of vocational qualifications in national diplomas. To complement national diplomas, qualifications have been designed that equip employees to perform certain tasks and at the same time to adapt to changing situations. In the French system, these serve as supplementary qualifications. In this context, the following types can be distinguished:

- **FCIL** - these are primarily offered at ISCED level 2 or 3, on the initiative of companies or schools under local State supervision, for young people who are still studying at a vocational school or who are working for a company under a training contract. They may involve specialisations or enhancement of the initial qualification;

- **CQP** - these are qualifications specified exclusively by the social partners in the relevant sectors. They are strongly geared to job classifications (job profiles) and make no distinction between training and continuing training;

- **'Titres homologues'** [equivalent qualifications] - these serve to provide State recognition and inclusion of vocational qualifications acquired outside the system of State diplomas. The process can be regarded as an example of transparency of proof of qualification.

**Germany**

The German vocational training system has, for many years, been confronted by increasingly heterogeneous trainees, as regards their social origin and prior education. In the wake of the expansion in education, holders of the Abitur, the school-leaving and university entrance qualification, are also increasingly seeking vocational training in the dual system (combined work and training). At the same time, training places are also being sought by young people who are disadvantaged owing to social problems and learning difficulties, or who come from a different culture, based on a different language and education.

As in other industrialised nations, technical and socioeconomic changes are also resulting in rapid changes in specialist knowledge and in a trend in the structure of qualifications involving increasing demands on the one hand while, on the other, new standards are being set. Above all, however, it is subject to rapid change. Even now, vocational occupations are increasingly 'saturated' with information, i.e. they primarily consist of the obtaining, assessment and processing of data and information, for which general education and supplementary vocational qualifications are becoming ever more important. Thus with regard to the structuring of vocational training and its content and the modernisation of vocational training practice, there is a need to develop approaches and produce plans that take account of this increased dynamic.

Since the early 1990s, these trends have also given rise to a lively debate about the future of the dual vocational training system and about the structural reforms required in the vocational training system as a whole. For the scope of the reform possible in the vocational training system has been significantly increased in recent years because companies have increasingly been reducing their training provision and attempting to cover their future skills requirements in other ways that are cheaper and more efficient, and/or some of those seeking training are now turning away from dual training, because other training paths offer better employment and career opportunities.

The groups in society responsible for vocational training do not currently see prospects for reform as lying in a largely nationalised
and school-based vocational training, analogous to the training model implemented not only in France, but also in the majority of EU Member States. However, the trends outlined make it necessary to consider more comprehensive forms of increased flexibility for and differentiation of vocational training paths, new combinations of school-based and dual vocational training and continuing training, and increased interchangeability between general education and vocational training.

The first stage of the reform is aimed at modernising existing vocational training courses in the dual system and creating new training profiles for innovative fields of employment (e.g. the information and communication sector, the printing industry and the media, the transport sector). A fundamental principle in the context of modernising existing training profiles and creating new ones consists of making training courses more dynamic and flexible. Key features are:

- the acquisition of broad basic skills in the first 18 months of training, with differentiated and dynamic skills profiles building on these. This internal differentiation enables skills to be built up in a wide variety of areas and also ensures that training occupations cover a very varied range of products and activities;

- a combination of compulsory qualifications (key qualifications) covering the entire range of future fields of activity and optional qualifications (c.f. inter alia Len-nartz 1997).

The second stage of the reform is aimed at developing self-contained, standardised ‘building blocks’ (modules) which build on one another and can be completed, as 'supplementary qualifications', either during initial training or immediately afterwards. They are aimed at making vocational training more attractive, in that they make it possible for individuals to make their own choices and decisions as regards future career development paths, and make training better adapted to differentiated requirements. At the same time, the intention is to create more fluid transitions between initial and continuing training, in terms of both timing and content.

However, it is not yet clear how these supplementary qualifications can be combined with traditional vocational and/or general qualifications, or who will offer and provide them. Even if the basic strategy pursued consists of listing these supplementary qualifications acquired in a portfolio (vocational training ‘passport’), the question of transparency and of the value of the achievements described will arise (Kloas 1997). Thus there is a need for an analytically based certification system, covering both initial and continuing training and enabling these qualifications to be countable and interchangeable. The introduction of credit systems may be a first stage in transparently documenting final qualifications, job experience, and part and supplementary qualifications. They also serve to make management of the qualification and development process autonomous, although careful consideration must be given to their usefulness and to the work involved. Thus experience of and trends in modular approaches to vocational training, as apparent in the UK and to some extent also in the Netherlands, are also becoming increasingly important in connection with modernisation of the German vocational training system.

Research is also required into the possible value of these modular concepts for continuing training and the structure of qualifications in further education in Germany. For in view of the need for lifelong learning, in Germany too there is an increasing need to look at the question of the usability and countability of part qualifications acquired in training or at work. Here, the English and Dutch concepts demonstrate a way of developing flexible but nonetheless coherent continuing training structures. As experience to date demonstrates, a precondition for this is effective training counselling, which informs individual trainees of the options available as regards part qualifications and of the consequences of the relevant options in terms of acquiring a nationally recognised continuing training qualification.

**Denmark**

In many respects, the structures in Denmark are similar to those in Germany. This applies
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in particular to the organisation of vocational training, in which here too the most important pillar is dual vocational training. Unlike Germany, however, Denmark has successfully implemented a direct link between school and company-based forms of vocational training. These structures promote interchangeability between the systems and also support the claim to equivalence of vocational training and general education.

Since the Vocational Training Act was passed in 1991, those completing the nine-year period of compulsory education (folkeskole) have been able to go straight on to a vocational school. Young people who start on initial vocational training can, if they are suitable, switch to a vocational school in the second year. Conversely, students at vocational schools also have the option of continuing their initial vocational training in the dual system. The law on the higher business examination (HHX) and the higher technical examination (HTX) integrated these qualifications from vocational schools into the reformed system of initial vocational training and thus, at the same time, strengthened these schools’ position and made them equal to schools providing general education. Both qualifications serve as entrance qualifications for higher education institutions, but also directly qualify holders to enter employment.

In addition to purely school-based vocational training, young people who have completed their compulsory education also have the option of dual training in 85 occupations, with over 200 specialist subject areas. Unlike the situation in Germany, however, these dual training courses no longer include only traditional training, but also courses whose duration can range from under one year to 5½ years. Dual training courses are organised in blocks, with periods at vocational school alternating with training periods in companies. However, work is currently being done on another reform of vocational training, due to take effect in the 1999/2000 training year. This is characterised by a framework for qualifications, a modular structure, and local/regional autonomy for vocational training institutions. Individualisation and increased flexibility will be universal principles in the new structure and organisation.

In future, initial vocational training will be organised in two stages for everybody:

1. In the basic course, there will be a drastic reduction in the number of training courses hitherto available. The basic course can take between 6 and 18 months, depending on previous education and the combination of modules. During the course, it will also be possible to select units facilitating access to more advanced training courses. In all cases, the compulsory element will involve 15 weeks of key qualifications and can be supplemented by optional modules on the basis of an individual plan. It ends with an examination which constitutes a condition for entry to the main course.

2. In the main course, specialisation takes place. Here too, there is a compulsory element and an element in which individuals can choose options on a modular basis. The optional units are offered in both initial and continuing training - most colleges are active in both fields (Hanf 1999).

In Denmark there are close links between initial vocational training, continuing training and skills training for the unemployed. On the one hand, this method of organisation makes it possible to coordinate the systems as regards the content and recognition of qualifications. On the other, the modular forms of provision which have already been prevalent in continuing training for many years allow scope for adapting the training available to meet the needs of specific target groups. Most continuing training programmes are divided into relatively small learning units. In virtually all the programmes, certificates are issued for individual courses, and depending on individual ability, participants can also acquire a nationally recognised general or vocational qualification by combining individual building blocks in a series of courses over a shorter or longer period. Building blocks from general education leading to a school-leaving qualification can also be combined with building blocks from continuing training alongside employment (labour mar-
The certification of individual courses, and not simply of one overall course, also makes it possible to continue adding qualifications later precisely at the point where earlier studies were broken off.

The original fears of the skilled workers’ trade unions that these part qualifications in the context of continuing training could be detrimental to qualifications acquired in dual training have proved to be unfounded. It has instead proved to be the case that sectors extensively involved in continuing training alongside employment also have large numbers of trainees. In addition, the introduction of modules into continuing training alongside employment (labour market training) and the increased flexibility have also provided a major impetus for the reform of initial vocational training, which is also to be organised in modular form in the year 2000 (cf. Nielse 1996).

1.2 Starting points for an independent and equal vocational training system

The above overview is based on the results of surveys in countries in which there are significant variations in the degree of individualisation and differentiation of vocational training paths. As the generalised summary in Figure 1 shows, the objectives of differentiation and increased flexibility are pursued with the aid of a variety of tools. Vocational training is being made more flexible, in an attempt to create more fluid transitions to employment or continuing training and to make processes more uniform, in order to make access to the range of training available more transparent. The compromise between State regulation and market orientation aimed at in this process leads both to common features and to a variety of features specific to particular countries, which can be summarised as follows:

- The trends in the UK towards a wholly modular vocational training system are closely linked to the concept of individualised and lifelong learning. The use of modules enables those responsible for training to gear the training they offer more markedly to the aspirations and motivations of individual trainees, via varying combinations of modules. Examination units and credits are becoming increasingly important as tools for achieving increased flexibility, differentiation and interchangeability. However, it still proves difficult to bring later coherence to fragmented qualifica-
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tions, and also to eliminate the existing diversities between and within qualifications from general education and vocational training. For differences in the delimitation of the subject canon in courses of general education and in the occupational fields in GNVQs and NVQs, differences in learning and test modalities, differences in assigning test units and qualifications to levels of difficulty within the qualification framework and, last but not least, differences in the responsibilities and regulation mechanisms for the qualifications in the various education and training courses are still making it difficult today to provide options for learning in different educational paths, which allows for opportunities to switch between general education and vocational training, and makes them interchangeable.

The Netherlands sees its modular vocational training system as an innovative system geared to future requirements as regards lifelong learning, increasing Europeanisation, and rapid industrial change. The system’s modular nature makes flexible switching between school-based and dual vocational training courses possible. At the same time, trainees have a free choice of and can expedite entry to the various learning modules, depending on their existing knowledge. Training modules are also seen as offering a further benefit, in that they make occupational structures transparent, identify a quality system, and increase flexibility via differentiation. An important part is played in new forms of organisation by regional cooperation networks, which both coordinate initial and continuing training and also undertake coordination of the range of training offered with labour market requirements. Methodological concepts for vocational teaching are also elaborated, in order to provide effective modules constituting vocational training geared to industrial change.

In France, a number of initial reforms have significantly extended the formal interchangeability of the education and vocational training systems. In practice, however, it is still very difficult even now to relate separate qualifications systems to one another. In addition, owing to pressure from the expansion of education, for some time a strategy of increasing the value of vocational training has been pursued. With the introduction of the vocational baccalaureate, an independent vocational training path has come into being, which in principle opens up the possibility of moving across to a higher education institution. Efforts are also being made to introduce further dual vocational training courses into the education system. To some extent this has been done in the form of ‘alternance’ training. However, these dual training forms have little in common with the German model of dual training, because in them company-based training and school-based training are consecutive rather than being simultaneous. Owing to the national policy of decentralisation, the regions have acquired important responsibilities and powers in the vocational training field in recent years. These are used to promote close links between schools and companies on a lasting basis, and increasingly to supplement national qualifications with additional local/sectoral qualifications. However, there are still socio-cultural obstacles in the way of promotion of dual training courses, because even today vocational training has less social prestige in France, since it is the path followed in particular by students unable to go on to higher education.

In Germany, the emphasis is, firstly, on concepts and tools relating to ‘internal’ differentiation, the intention being to use them to promote greater dynamism and flexibility in vocational training courses. Secondly, the aim is to individualise vocational qualifications and to create more fluid transitions from initial training to continuing training, by offering a wider range of ‘supplementary qualifications’ in vocational training. However, the growing need for workers with qualifications of varying levels and the increasing challenges faced by vocational training, in terms of training both increasingly better educated young people and disadvantaged
young people, are also making it necessary to adopt an approach involving 'external differentiation' and greater interchangeability between the paths to qualifications based on general education and vocational training. Organised training courses over and above the dual system (dual qualifications) are also being tested in pilot projects currently in progress. In addition, efforts are being made to introduce more interchangeability between vocational training and education by making qualifications obtained in vocational training equivalent to those in general education.

One of the primary aims of vocational training policy in Denmark is to ensure that vocational training offers young people a broad, varied and comprehensive education, and provides them with options for more advanced training. Care is therefore taken to ensure that young people who have chosen to follow a course of vocational training also receive a comprehensive general education. The access paths to vocational training courses at secondary stage II, leading to a dual qualification (qualification for an occupation plus entitlement to enter higher education), have also been coordinated with the access paths for initial vocational training in the sandwich system. This means that it is possible for students/trainees to switch from one course to another following basic vocational training. Vocational training as a whole is currently being reformed on the basis of a uniform framework. Key features of the reform are modular structures, compulsory and optional building blocks, relative autonomy for training providers and closer links between initial and continuing training.

The current efforts to modernise vocational training bring up the question of development prospects. A question that is becoming ever more urgent in all European countries is that of the properties and quality vocational training systems need to possess in order to remain attractive in future. It is now acknowledged that benefits and transparency for the players involved are fundamental criteria of such attractiveness. It is becoming apparent in respect of those seeking training in particular that this attractiveness is increasingly being measured in terms of the options training paths offer as regards opportunities for vocational and personal development and the potential employment prospects they offer.

It is apparent throughout Europe that the boundaries between general education and vocational training have recently become more fluid: the increasing importance of languages, mathematics, science and politics and the undisputed importance of technology and economics as integral elements of modern vocational training have brought about a variety of interconnections between courses of general education and vocational training. However, as yet education policy has not taken this approximation of content and structures sufficiently into account, for even now

- qualifications and certificates acquired in vocational training frequently do not constitute entitlements and ‘career opportunities’ equivalent to those acquired in the school/university system;

- qualifications acquired via continuing vocational training and job experience are inadequately recognised in terms of certification, and are rarely adequately credited in a switch to further education;

- at best, vocational training paths in companies and the civil service end with admission to a middle level of seniority. Considerably more importance is attached to a university degree, as a formal entitlement in the context of appointments and promotions, than to a skill acquired via vocational training.

In comparison with school-based academic education, initial and continuing vocational training therefore still means ‘second best’ to many today, or a time-consuming change of direction in order to achieve access to traditional academic courses and qualifications. In addition to strategies for making it easier to switch from vocational training to general education, it will therefore be necessary in future to change the emphasis and develop
convincing plans, if the aim is genuinely to achieve parity of esteem, and vocational training really to be made more attractive.

Since all previous experience has shown that neither adaptation of vocational training to general education nor switching to traditional school-based academic education brings about equivalence of vocational training and general education, there is a need to give more thought to developing a plural system of vocational training paths, which extends from initial training via continuing training through to qualifications in the tertiary sector (higher education institutions). Construction and expansion of such a plural system offers the potential for an independent vocational training system genuinely to create an alternative of equal value to the school-based academic education route. From the viewpoint of organisation and teaching methodology, it is easier now than it was in the past to realise a plural system of vocational training paths from initial training through to higher education qualifications. For even where large areas of vocational training are organised in the dual system, it is apparent that owing to new forms of organisation, work and learning in undertakings (cf. section 2), it is easier than it was before to create links and connections between learning in companies and learning in schools and in higher education.

However, models of an independent vocational training system geared to the future do not go far enough if they are restricted to new forms of training and a new quality. What is needed is, rather, consistent expansion of job-based continuing training options, which facilitate subsequent acquisition of additional skills or updating of existing qualifications in working life. ‘In many countries, the absence of new organisational concepts for continuing training are still today preventing stronger links between the content of initial and continuing training and, in many fields, career planning beyond vocational training’ (Schmidt 1998, p.144). However, vocational training becomes attractive only if, following initial training, senior skilled worker positions and middle management positions can be achieved via continuing training.

A transnational comparison makes it clear that in addition to regional and sectoral continuing training qualifications, the existence of national standards for generally recognised continuing training qualifications constitutes an important cornerstone in terms of making vocational training attractive. To combat the risk of increasing ‘emigration’ of ambitious and better-performing young people from vocational training, there are strong arguments in favour of the option already realised in individual cases, namely of building up and expanding the provision of continuing training with dual organisation, e.g. along the lines of the English colleges of further education or the American community colleges.

Furthermore, access to more advanced general education courses and to higher education in particular must be improved for those completing vocational training. Thus there is a need to expand the early moves in this direction in individual European countries, aimed at linking particular vocational training courses with qualifications entitling holders to enter more advanced general education courses or even higher education in universities or institutes of higher education. However, there is an even more urgent need to expand provision of academic continuing training at higher education institutions for holders of vocational training qualifications and, in addition, to establish job-based courses of study at these institutions. But this can be successful only if there is a change of thinking within these institutions, and if they develop, in close cooperation with undertakings, suggested plans for the design of the content, method, teaching and organisation of academic continuing training provision and/or of basic courses of study, which must be job-based (i.e. a new combination of working and learning). Because of their proximity to practice and owing to economies of time and cost, such possibilities could offer many young people, but also undertakings, much more convincing solutions than conventional paths involving a laborious reorientation to traditional school-based academic paths. Job-based courses of study at higher education institutions therefore require ways of reducing their length via crediting of existing vocational qualifications. The periods aimed at should
be between two years (bachelor) and four years (master), based on international standards and higher education qualifications. In addition, the organisation and provision of these courses of study should make intensive use of multimedia learning options and thus be geared to the needs of students with jobs.

2. Models and forms of company-based learning

The scope and quality of learning in modern work processes have become increasingly important for the restructuring of company-based training work and the development of initial and continuing training. In particular, it is a matter of answering the questions of the forms in which learning takes place at work, what it comprises, and the learning orientations and teaching methods involved. It must be assumed that learning in modern work processes is very different from pedagogically organised learning. However, as yet almost no analyses are available. The key question is whether the learning is limited to economic and technical goals or whether the work opens up learning potential and learning opportunities that also promote personal development and training processes.

Critical assessments take as their starting point the fact that today’s world of work is characterised by the disintegration of social ties and a reduction in the scope for identity. Accordingly, de-traditionalism and de-standardisation are occurring, and traditional value-oriented and social ties at work and in the job are disintegrating, to be replaced by a capacity for work as a function of the work process, geared to flexibility and mobility. This is derived from pressures and dynamics in the industrial and economic systems compelling ever more comprehensive and ever faster production, so that the work process has to be made ever more elastic and flexible. Sennett (1998) sees flexibility as the dominating factor in modern work processes, virtually doing away with personality-oriented development options and dependable social relationships. And more than ten years ago Beck had already established that in the wake of ‘de-standardisation of paid work’ the traditional principle of an occupation that provided meaning had become obsolete. ‘Just like the family, the occupation has lost its former certainties and protective functions. With the occupation, people are losing the backbone of their lives, which came into being with the industrial age’ (1986, p.222). Beck regards ‘a society of plural activities’ as a possible future scenario, in which he sees the current ‘individualisation’ and ‘de-standardisation’ of work as the counter-principle to its standardisation (1999, pp.62ff.).

This contrasts with jobs that combine modern concepts of work and organisation with new social ties, improved opportunities for learning and education, and dynamic professionalism. Learning in new forms of work and learning in particular is acquiring a new quality, and in this context, according to the most far-reaching assumptions, new forms of work become equivalent to forms of learning. For example, in a recent empirical study on ‘forms of learning integrated with work’, carried out to supplement the data on continuing training in companies obtained in the context of the FORCE European action programme, work-based learning was categorically re-evaluated. In the study by the skills-development-management working party (1998), in addition to ‘autonomous learning’ and the ‘learning workshop’, new forms of work organisation such as teamwork and project work were, per se, categorised as forms of learning (pp.29ff.). Other authors speak of a change of conception and concept in company-based learning and continuing training in companies in the context of modern work and production planning and the associated informal, self-organised forms of learning. According to them, traditional deliberate forms of learning in training institutions are obsolete. ‘Qualification’ should be replaced by ‘competence’, which would bring the ‘actual individual’s own organisation into the picture’ (cf. Erpenbeck and Heyse 1996, p.110).

These views supported by empirical studies are based on changes in work that are primarily due to the introduction of new corporate concepts and the associated reorganisation and restructuring. With new forms of work and learning in companies, extensive changes...
are looming for vocational training practice and research, and are critically important to the future of initial and continuing training. In what follows, we shall first describe basic work-related learning models and then go into newly developed forms of learning in companies.

2.1 Work-related learning models

In what follows, work-related learning in initial and continuing vocational training should be seen from the European perspective (cf. also Dehnostel and Dybowski 1998; Greinert 1997; Greinert/Wiemann 1992, pp.66ff.; Koch 1998b; Koch and Reuling 1995). The term ‘work-related learning’ first needs to be defined and broken down. ‘Work-related learning’ describes learning processes within and outside companies whose subject is the content and structures of work and work processes. On the one hand, it relates to a narrow field that is learning-venue- and task-specific and, on the other, it must be understood as involving a methodological approach that relates learning and work to one another. In the context of the relationship between learning venue and work site, on the basis of experience to date in Germany, work-related learning can usefully be broken down as follows:

- learning tied to work;
- learning connected with work;
- work-oriented learning.

Learning tied to work is distinguished by the fact that learning venue and work site are identical. Learning takes place in the workplace or in the work process. On-the-job training, group learning in the work process and company learning islands are examples of this. In learning connected with work, the learning venue and the actual workplace are separate, although they are directly connected in terms of space and work organisation, as for example in quality circles, learning workshops and technology centres. Work-oriented learning takes place in central learning venues, for example in vocational schools, vocational training centres and training workshops. In some cases, commissioned work is carried out in environments very similar to actual workplaces.

A look at the basic forms of work-related learning in Europe shows that, typologically speaking, five models can be distinguished, to which concepts and systems are assigned in the overview that follows, by way of example: learning by working in the actual work process (1); learning via instruction (2); learning via integration of learning through experience and deliberate learning (3); learning via exploration and practical training (4); learning in simulated work/production processes (5). Figure 2 shows the five models with specimen concepts, systems and forms of learning assigned to them. It also shows the kind of work-related learning each of the models involves.

2.1.1 Learning by working in the actual work process

Learning in the actual work process is the oldest and commonest form of vocational skills training. In this form of learning, the workplace is also the learning venue. In craft training and traditional side-by-side training, in which the trainee is assigned to a skilled worker, company- or occupation-specific work activities are learned by imitation. The trainee learns in the company's working situation, by watching, copying, joining in, helping and trying out or simulating what is seen. The result of the learning essentially depends on the following factors: the specialist and teaching competence of the trainer or the skilled worker doing the training, the work tasks, the organisation of the process and structure, the workplace equipment and the corporate culture. Learning is stimulated by working, and motivation and identification come into being because the products or results of the work are useful and their meaningfulness is directly apparent.

This form of training is found in German-speaking countries in particular, but also in France, and has also recently been evolving again in Central European countries such as Poland and Hungary. In continuing training in companies, a similar form is found, adapted and integrated into work. Traditional training concepts, adaptation of skills in compa-
nies, and learning in modern forms of work organisation usually come under this model of work-related learning.

2.1.2 Learning via instruction, systematic instruction in the workplace

Systematic instruction takes place in the context of traditional dual training in a company and in the context of skills training for starting a job or changing jobs in a company. In this training, the master craftsman, the journeyman or the skilled worker providing training has a key role in applying and carrying out the instruction. He selects the work tasks, plans the work organisation and work processes, instructs the trainees, monitors the progress of the work and evaluates its results. One method of instruction is the four-stage method, i.e. preparation, demonstration, imitation and practice. This and similar methods of workplace instruction, such as analytical work instruction and instruction based on work rules, have acquired only limited importance, as training for complex work activities in industrialised countries with company-based training has increasingly been transferred to training workshops. Training systems in these countries initially reacted to the change in skills requirements in production and service processes primarily by modernising training methods in learning venues away from the workplace.

2.1.3 Learning via integration of experiential learning and deliberate learning

In the field of training, decentralised forms of learning such as learning islands and learning from commissioned work have acquired great relevance. They are characterised by the fact that they combine learning through experience and deliberate learning via work. One fundamental reason for this integrated learning lies in the specific learning requirements of reorganised undertakings. Continuous processes of improvement and optimisation, customer and business-process orientation, and a high capacity for innovation necessitate the integration of work and learning. The concept of the ‘learning undertaking’ can be regarded as a synonym for this integration-based approach.

<table>
<thead>
<tr>
<th>Basic work-related learning models</th>
<th>Examples of concepts, systems, forms of learning</th>
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<tbody>
<tr>
<td>(1) Learning by working in the actual work process (learning tied to work)</td>
<td>Craft training; traditional side-by-side training; on-the-job training; group learning in the work process; some training programmes and dual study courses</td>
</tr>
<tr>
<td>(2) Learning via instruction, systematic instruction in the workplace (learning tied to work)</td>
<td>In-company training; four-stage method; some training programmes and dual study courses</td>
</tr>
<tr>
<td>(3) Learning via integration of experiential learning and deliberate learning (learning tied to or connected with work)</td>
<td>Quality circles; ‘learning places’; learning islands; order-based learning; cognitive apprenticeship; coaching; constructive learning; interactive learning</td>
</tr>
<tr>
<td>(4) Learning via exploration and practical training (learning tied to or connected with work)</td>
<td>Supplementing school-based vocational training courses, skills training in training centres, study courses; school-based preparation for an occupation</td>
</tr>
<tr>
<td>(5) Learning in simulated work or production processes (work-oriented learning)</td>
<td>Schools of production, order-based work in training centres</td>
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Company-based learning in the context of new forms of learning and training paths

In Germany, new learning schemes have been developed in numerous State-sponsored pilot projects for in-company training; these schemes have promoted the integration of learning through experience and deliberate learning, as regards teaching and organisation. Examples are the pilot projects for new methods such as the project and team methods and learning from commissioned work (Schmidt-Hackenberg et al. 1989), and pilot projects on decentralised learning and the learning-island concept (Dehnbostel et al. 1996). Innovative approaches of this kind have been developed in similar fashion or, in some cases, adapted, in other countries with company-based training systems.

2.1.4 Learning via exploration and practical training

Exploration and practical training in undertakings constitute a work-related learning concept in which actual practice in the company is integrated into wholly school-based training, into skills training programmes in a centre for initial and continuing training, and into training in institutions of higher education. While practical training usually takes place alongside school-based training courses and training in higher education institutions, specifically targeted exploration frequently supplements skills training in initial and continuing training centres. With both forms, the main aim does not generally consist of acquisition of workplace- or occupation-specific qualifications. Instead, it is to give trainees an insight into the reality of work and company life, and to increase the motivation to learn via actual participation in the work of a company. The latter relates to periods of practical training in particular, while trainees systematically master subjects such as work organisation, skills training, economics or social skills via exploration of specific issues.

The model of work-related learning via practical training is particularly widespread at international level. In many countries, school-based training has recently been expanded by the introduction of practical training stages in companies. A typical example is the so-called alternance scolaire in France. On the basis of a national framework regulation on training objectives, schools conclude agreements with companies on the nature of practical training for each student. The school is also responsible for monitoring the teaching quality of the practical training. In reality, however, the systematology and quality of practical training vary widely, since schools have only a limited influence on the structuring of practical training in companies.

2.1.5 Learning in simulated work or production processes

Work-related learning in simulated work processes takes place in (skills) training centres and, in particular, in schools of production or training production units. The aim is to create a learning situation that approximates as closely as possible to reality and facilitates the acquisition of complex skills and experiences and reflection on these. As the setting up of quality circles and learning islands in vocational schools and skills training centres shows, this form of work-related learning overlaps with model (3) in Figure 2, with its combination of learning through experience and deliberate learning. However, here there is no authentic learning through experience, although in contrast to didactically structured learning in training institutions, learning is strongly influenced by the criteria of production technology, work organisation and economics.

In Western Europe, schools of production have primarily been set up to integrate the disabled or the socially disadvantaged. No explicit vocational training takes place in them - as in Denmark, for example. On the other hand, in the countries of Central and Eastern Europe, vocational schools with their training workshops also undertake skills training on the lines of the production-school model, without the function of integration into society. They often work as suppliers for companies or produce simple goods directly for the market. One important reason for this is to safeguard their existence, owing to inadequate State resources. The majority of this skills training can be classed as training for simple jobs.
2.2 Forms of company-based learning geared to the future

In the tabular depiction of models of work-related learning, in Figure 2 under (3), quality circles, learning islands and coaching, inter alia, are listed as examples of new forms of company-based learning. Research carried out by the Federal Institute for Vocational Training (BiBB - Bundesinstitut für Berufsbildung) between 1996 and 1998 under the research project 'Company strategies for innovation and learning' (cf. Dehnbostel and Dybowski 1998; Dybowski et al. 1999) showed that in modern undertakings, equivalent future-oriented forms of learning have come into being on the basis of changing organisational forms and skills requirements. They are of crucial importance both for skills training, including in-company training, and for the initiation and implementation of innovations and improvement processes. This is consistent with research and the results of projects implemented in the context of the Leonardo programme and the FORCE programme mentioned earlier (cf. ACEA Learning Network 1996; 1997a; 1997b; QUEM working party 1998; Brown 1997; European Communities 1999).

In the BiBB research project, pilot studies and case studies were carried out in ten medium-sized and large undertakings. A key criterion in selecting companies was that they should be carrying out restructuring and reorganisation measures or should have already done so. New learning orientations and new forms of work and learning organisation were of crucial importance to the empirical and qualitative research. The approach and significance of the future-oriented forms of learning examined in this context are outlined briefly below. As the brief descriptions of these forms of learning show, there are considerable differences in their objectives, structures and level of dissemination, but they combine work and learning in a systematic form that goes beyond learning through experience.

a) Instruction/coaching

This form of learning is used in all the undertakings examined, and may involve individual instruction or group instruction. The instruction is provided by colleagues, group representatives, superiors, trainers and staff development workers. In contrast to traditional methods of instruction such as vocational adjustment, briefings and the four-stage method, instruction is primarily regarded by undertakings as skills training alongside the work or production process. Coaching, which focuses on simulating and developing staff, team representatives and leaders, is an example of this.

b) Quality circles

Quality circles, as a tool to involve employees in corporate problem-solving processes, were tried out in some of the undertakings examined as far back as the 1980s, when new production concepts were emerging. The fundamental aims of quality circles have today been transferred to forms of work organisation such as teamwork and project work. Objectives such as participation, cooperation, problem solving and improvement of skills can obviously be realised at least just as well in these forms of work organisation as in separately instituted circles.

c) Learning workshops

The learning workshop as a form of learning is aimed at resolving company problems connected with production and cooperation and at acquiring specialist knowledge and improving work productivity. Learning in a learning workshop, connected to work and based on experience, is aimed above all at acquisition of skills and competences directly required in the work process. The undertakings examined are familiar with the learning workshop as a form of continuing training, but do not use it as an independent form of learning. Instead, in some cases project work is geared to the learning workshop model, particularly with regard to communication, problem solving and the exchange of experience.

d) Decentralised learning/learning islands

Learning islands and other decentralised learning venues such as learning stations and
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Skills centres were initially set up in the context of the series of pilot studies mentioned earlier. In the majority of the undertakings studied, learning venues of this kind have been in existence for only a few years. The concept of decentralised learning provides for a shift from centralised, formal and systematic learning structures in favour of increased flexibility, more open structures and work-related learning, and for orientation in principle towards dynamically structured professionalism. At the same time, learning in decentralised learning venues is combined with learning in central learning venues, with the aim of optimising learning potential and the benefits of learning.

e) Order-based learning

This form of learning was originally developed in the craft trade and in small industrial companies, in which there were virtually no organised forms of learning. The research has shown that customer orders within and outside the company are implemented in the form of order-based learning in the training of some medium-sized and large companies. Orders are planned, implemented and evaluated in coherent fashion. They are didactically and methodically processed, with the emphasis on customer orientation as a communication and structuring process and on holistic implementation. Order-based learning may also take place in the context of other forms of learning, such as instruction or learning islands.

f) Interactive learning

Interactive learning has been postulated for many years as an innovative form of learning for modern work processes. Research has shown that it is used as a form of learning, either on its own or in combination with other forms of learning, but that it has not gained widespread acceptance. In principle, interactive learning at work takes place on both an individual and group basis, and organising and controlling the learning processes oneself are an important element. Software learning materials used according to the learning requirement arising in the job concerned can accordingly be regarded as teach-yourself media.

These six forms of learning or, to be more precise, forms of learning organisation, can be regarded as symptomatic of modern industrial work processes. They have in common the fact that jobs and work processes are expanded and enriched from the point of view of systematic learning and work education, achieving a favourable starting situation for restructuring, of proven quality, of in-company learning concepts. Learning based on experience and integrated into work activities is specifically combined with deliberate learning.

A fundamental distinction can be made between forms of in-company learning aimed at the acquisition of competences that specifically include deliberate learning and go beyond the relevant job-oriented requirements, and forms in which skills and competences are acquired informally and remain limited to work requirements dictated by the situation. The forms of learning outlined, as forms of learning organisation specifically introduced and involving the addition of a learning infrastructure to the workplace, fall into the first category. A distinction must be made between these and the second category of in-company learning, modern forms of work organisation, in which learning through experience plays an important part, for instance in order to implement continuous processes of improvement and optimisation, but learning is not specifically incorporated in organised fashion.

Research into company strategies for learning and innovation has shown that learning through experience is extremely effective in the following forms of work organisation: project work, rotation, vocational adjustment and continuous improvement processes. Thus learning at work can in principle be traced back to two different types of organisation: forms of learning organisation, in which deliberate learning and learning through experience are specifically and systematically combined, and forms of work organisation, in which learning takes place informally and on the basis of experience. According to the undertakings studied, independent forms of learning organisation are apparently not considered necessary if sufficient learning takes place on the basis of experience, in modern
forms of work organisation, and can be utilised to optimise work processes.

The BiBB research has also shown that another type of in-company learning, learning off the job, is undergoing significant change. It is consistently apparent that the scope and teaching and methodological investment of previous forms of off-the-job learning are not being maintained. Priority is clearly being given to learning on the job, related to and associated with the job. There are accordingly fewer traditional, systematically structured specialist courses and seminars. Work-related events such as support workshops for teamwork and project work are increasingly being offered and implemented. In general, skills and vocational training measures in central educational establishments and institutions increasingly relate to social and methodological topics. In addition, benchmarking represents a new form of in-company off-the-job learning. Figure 3 shows the various types and forms of in-company learning.

3. Reorientation of learning and the changing role of training staff

The models described and, in particular, the new forms of in-company learning show that learning processes are increasingly important in modern forms of work and organisation. Learning is aimed at developing the competence of individual employees and social groups. From the companies’ point of view, the primary aim is to facilitate and expedite processes of improvement, optimisation and development. Learning potential in the workplace is utilised and in some cases com-
Company-based learning in the context of new forms of learning and training paths

bined with systematic learning. The particular advantages of learning in modern work processes are:

- the seriousness and binding nature of the work process;
- the fact that the workplace is the learning venue serves to orient and motivate;
- the modernity, openness, concrete nature and contingency of the work content; and
- the opportunities for experience-based learning, organised by the individual.

The need to deal with new skills requirements and a world that is changing both within and outside work is the starting point for reorientation of learning and for topical teaching methods in vocational training. In recent years, not only have new forms of learning and learning orientations come into being, but comprehensive teaching concepts and a change in the foundations of learning theory are also emerging, such as learning through doing and constructive learning in particular. New learning potential, structuring possibilities and forms of learning at work give rise to the question of the extent to which the company itself can become the starting point for new learning and teaching orientations.

In this context, it is apparent that in principle new learning orientations and forms of learning necessitate expansion of traditional teaching theories and models. Informal and experience-related learning processes at work and in other places with no organised system of learning are not taken into account in traditional teaching methods. These relate only to deliberate learning, i.e. systematic and organised learning. In addition, the prevailing didactic understanding of individual learning processes takes virtually no account of the learning of social groups and organisations. Inclusion of them compels vocational training to implement didactic processes and developments that take more account of real experiences and subjective concerns, and distinguish training courses and living patterns. As demonstrated in the new forms of learning in the previous section, integration of learning through experience and deliberate learning is crucially important. It is a constituent of forms of learning in companies and accords with self-organised learning and lifelong learning. For teaching staff, these learning orientations also involve a fundamental change of function and role.

3.1 Integration of experiential learning and deliberate learning

In general, learning through experience takes place via reflection on experiences that are always preceded by action. In practice, experience-based knowledge appears in the form of intuition or a feeling for materials, machines, work processes and social situations. A distinction must be made between action based on experience and experience-based knowledge, and technically/rationally based action. Experience-based learning, which has traditionally been very important, is becoming even more important in the context of new corporate concepts and the new forms of learning described. For new corporate work and organisational concepts necessitate processes of optimisation, communication and learning for which learning through experience at work is essential. Dewey (1993, in particular pp.186ff.) saw reality as disclosing itself via experience-based learning on the basis of the learner's own self-determined activity, in real courses of action. The sequence ‘action - experience - reflection’ and its ongoing continuation, taking account of previous processes of experience and realisation, is then seen as ‘evolutionary progress’, on condition that learners take action to learn on their own initiative and, if possible, of their own accord. On this basis, reality will disclose itself to individuals via processes of learning and experience. This approach is correctly seen as a forerunner or precursor of the constructive learning approach (Gerstenmaier/Mandl 1995, p.882; Reich 1996, pp.197ff.).

To aid understanding of the concept, it should first be noted that a distinction must be made between experience-based learning, informal learning and learning by implication. Informal learning is the overall term for experience-based learning and learning by implication. Informal learning must be understood
Figure 4: Types of learning and knowledge in companies

as meaning learning that is not organised and has no formal framework, in the world of life and work. It is people’s fundamental, ‘natural’ self-teaching, which, according to Dohmen (1999), has the following characteristics:

- it does not take place in particular educational institutions remote from everyday life and work;
- there is no planned curriculum and it is not professionally organised, but tends to be triggered by events or to arise by chance and sporadically from situations of changing practical requirements;
- it is not arranged in a pedagogically conscious way, with a system of subjects, examinations and entitlements, but tends to be unaware, casual, a holistic response to a problem, and related to coping with situations and with life in general;
- it does not involve stockpiling learning remote from practice, but is directly experienced in its ‘natural’ function of supporting life and survival.

To make a rough distinction between the two subordinate concepts (they can, in any case, only be distinguished in analytical terms), experience-based learning and learning by implication, it can be said that experience-based learning, as understood by Dewey, takes place via reflective processing of experiences, while learning by implication tends to occur without reflection or awareness. As Fischer (1999) says, learning by implication is ‘a learning process of whose course and result the learner is unaware, or which at least cannot immediately be put into words’. Relevant examples of this are recognising a face in a crowd without knowing why, or learning to ride a bicycle without knowing the underlying rules and laws.

If we look at in-company learning, the types of learning addressed, in combination with other types of learning and knowledge, can be classified as follows, as shown in Figure 4: in in-company learning, a fundamental distinction needs to be made between informal and deliberate learning, with the latter being organised and formally geared to the provision of set learning content and learning objectives. While deliberate learning is from the outset aimed at achieving a specified result, with informal learning a result becomes apparent without generally having been deliberately aimed at. Of course this does not mean that the actions on which informal learning is based are unintentional. They are simply geared to corporate and entrepreneurial objectives and purposes, and not to learning options.
Company-based learning in the context of new forms of learning and training paths

The experiential knowledge built up via informal learning and the theoretical knowledge built up via deliberate learning are brought together in practical knowledge. As the overview shows, experiential knowledge is acquired not only via learning through experience and learning by implication, but also via deliberate learning. This is due to the fact that informal learning takes place, even if by the way, in virtually all life and work situations. Conversely, theoretical knowledge is enriched by knowledge acquired from learning through experience, which evolves into theoretical knowledge via reflection on experiences.

Experience at work relates to sensory, cognitive, emotional and social processes. The extent to which each of these is brought to bear is essentially dependent on work duties and objects, process and structural organisation, social relationships and the corporate culture. Here, clear boundaries are set by the logic of entrepreneurial business and organisational processes. Opportunities and scope for experience are tied to technical and economic objectives and intended purposes. Even if these boundaries are extended by the learning options in modern work processes mentioned, ultimately experience-based learning and structuring of work and work organisation so as to promote learning are subject to business calculations. The extent and boundaries of experience-based learning are crucially dependent on the extent to which economic and pedagogical objectives approximate to one another and overlap, a question which is virtually unanswerable in view of the change companies are currently undergoing.

Another restriction on experience-based learning lies in work processes that are increasingly characterised by information and communication technology. It is apparent that experience-based learning is no longer taking place in the way that it did in traditional industrial and craftwork environments. Some of the external experiences constituting a precondition for reflection are being changed by the application of new technologies, and some are disappearing. In particular, active work activities governed to a great extent by the sensory organs of sight, hearing and touch are increasingly being reduced. On the other hand, in sophisticated work organisation and in modern work and organisational concepts, both the need for learning and opportunities for it are increasing. The question of the extent to which this also involves an expansion of external experiences and experience-based learning cannot be answered at the current stage of development. In any case, new experiences are coming into being. Although these essentially relate to mediatised work activities geared to cognition, they still involve sensory and practical elements.

It is now characteristic of forms of learning such as quality circles and learning islands that they do not remain bound to learning through experience and the possible restriction on learning that this implies. They are characterised by the fact that they combine experiential learning with deliberate learning, even if in varying forms and with varying objectives. An example of this concept is ‘learning islands’, the new form of learning that has a number of points in common with other decentralised forms of learning such as quality circles and learning workshops. Learning islands are used for both initial and continuing training, although they were originally developed in the context of initial training. Learning islands and other decentralised forms of learning supplement the work infrastructure of traditional workplaces with a learning infrastructure, i.e. equipment, learning materials and audiovisual media are added to workplaces, and learning processes are specifically monitored at work. Similarly to the situation described in respect of different forms of teamwork, the distinctions are not always clear, or alternatively no clear distinctions can be drawn at the current stage of development. The common features of these forms of learning are summarised in Figure 5.

The traditional model of learning in the workplace is considerably expanded by the integration of deliberate and experiential learning in decentralised forms of learning, and new learning paths are opened up. The relevant place of work is structured in accordance with principles that promote learning, such as authenticity, an appropriate situation and social bonds. It is true that the learning is tied to work, but it is not restricted to expe-
Experience-related learning processes or on-the-job training. Work activities and the related reflection are interrelated with the expressed objectives and content of in-company training work. Experience-based learning processes are systematically combined with deliberate learning.

These new forms of in-company learning illustrate a change of perspective in corporate skills concepts. Linear and hierarchically determined patterns of thought, behaviour and orientation are being replaced by independent, participatory and process-based approaches to activities and learning. It is becoming possible for processes and developments increasingly to incorporate real experiences and subjective concerns and to take account of differing training paths and lifestyles. At the same time, this is combined with a change in the balance between teaching and learning: learning is acquiring greater importance in relation to teaching, and teaching is understood and implemented in the sense of monitoring and moderating. This will be explained in the last part of this chapter.

The extent to which these new learning options are brought to bear is essentially dependent on work tasks and objects, the process and structural organisation, social relationships and the corporate culture. Improvement, optimisation and design processes in modern work processes necessitate learn-
Company-based learning in the context of new forms of learning and training paths

### 3.2 Learning organised by the individual in new forms of work and learning

‘Self-organisation’ and learning organised by the individual are a fundamental, constitutive function of new forms of work and learning. In this context, self-organisation should not initially be understood as being based on theoretical principles of learning or teaching, but as a key organisational principle of modern work and organisational concepts. Consequently, pilot projects on decentralised learning and the institution of learning islands carried out in the Federal Republic of Germany were characterised by an understanding of decentralisation which involves increasing self-organisation and autonomy. Here, decentralisation is understood as being a process of transferring and delegating tasks and competences from central, management and work-preparation areas to operational areas and areas providing added value. In these areas, the scope of work, structuring options, decision-making powers and responsibilities are increased, in order to improve quality and performance standards, development and innovation processes and, at the same time, the opportunities to identify with the work.

‘Self-organisation’ in this sense also involves learning organised by the individual, irrespective of whether it takes place on the basis of

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**Figure 6: Principles of instruction-based and constructive learning and teaching**

<table>
<thead>
<tr>
<th>Instruction-based learning and teaching</th>
<th>Constructive learning and teaching</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learning is receptive, and is largely linear and systematic</td>
<td>Learning as an active/constructive, self-governed, situation-based process, the results of which cannot be predicted</td>
</tr>
<tr>
<td>The teacher teaches, demonstrates, explains; the learner imitates, takes in</td>
<td>The learner plays an active, largely self-determined part; the teacher is an adviser and helps to structure learning processes</td>
</tr>
<tr>
<td>Learning content is seen as closed systems of knowledge or elements thereof</td>
<td>Learning content and knowledge are not self-contained, they are dependent on individual and social contexts</td>
</tr>
</tbody>
</table>

In the new forms of learning, and in modern work processes in general, active learning with individual reflection will take place in complex contexts, but to only a limited degree. Receptive learning will also continue in certain work situations, for example when new technical systems are introduced or work organisation processes are changed. Complementary deliberate learning processes have also proved to be necessary, as ultimately opportunities and scope for experience are tied to technical and economic objectives and intended purposes. In general, it will not be possible to acquire comprehensive vocational competences solely or primarily via experiential learning in a restricted situation.

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![Table](image-url)
experience or deliberately. In the forms of work and learning cited, self-organised learning takes place in the process of work and in organised team meetings. Processes of self-organisation are an important precondition for implementing processes of continuous improvement and optimisation and for stimulating the development of knowledge and a capacity for innovation. For example, if one considers semi-autonomous teamwork, it can be seen that it involves a broad spectrum of learning. Regular team meetings, internal coordination and rotation, representation of the team by a spokesperson, and high levels of autonomy, scope for decision-making, and responsibility involve a potential for social and methodological learning that is almost never found in traditional work processes. From the point of view of teaching and learning theory, teamwork involves many individual and collective learning processes. Collective learning in groups also requires self-regulatory learning processes, via discussions and reflection (Dubs 1993, p.451), processes that are an element of corporate knowledge management. However, where teamwork is organised in a less complex and comprehensive way, and in other forms of work, there is a risk that self-organised learning will be reduced to learning based on adaptation to the work function. This risk can be combated by combining the learning with deliberate learning or with central learning venues with organised teaching.

Self-organised learning was already playing an important part in initial and continuing training in the 1970s, in other words at a time when preliminary academic study and closed curriculum concepts were to the fore. In vocational training, three approaches to self-organised learning in particular were developed and tested: the project method, the key text method and the team method. Sometimes these methods were understood as supplementing traditional methods such as the four-stage method, the side-by-side method and the teaching discussion, and sometimes they were seen as alternatives to them. These methods, cited as examples, can briefly be characterised as follows:

- **Project method:** learning is geared to holistic work tasks and projects that can be realised in practice, which are mainly planned, implemented and checked on one’s own responsibility and under one’s own control.

- **Key text method:** learning is imparted by texts on dealing with a task, so that as much as possible is learnt independently. These ‘key texts’ consist of key questions, a work plan and check sheets, and basic principles.

- **Team method:** learning in a group, which usually carries out work tasks or projects in a self-organised and cooperative way.

- **Four-stage method:** teaching and learning via practical work-based instruction in the company in a process comprising the following stages: preparation, explanation and demonstration, imitation and practice.

- **Side-by-side method:** learning via impressions and experience at work that are not specifically and systematically organised.

- **Teaching discussion:** learning by absorbing issues and factors raised in in-company vocational training, in order to impart skills content via discussion.

The traditional methods were rapidly proving incapable of coping with the emerging objectives of comprehensive vocational competence, integrality, and the acquisition of key skills. The new methods, aimed at self-organisation, cooperation and integrality, anticipated much of what modern work processes require in the way of comprehensive skills, which are increasingly being realised.

Differentiated work and job processes necessitate individual profiles of skills and competences and devotion of more time to continuing training, in the context of lifelong learning. This lifelong learning extends to all forms of organised and informal learning. The structuring and organisation of training and learning phases is to some extent dependent on individual preferences. Consequently, individual organisation of one’s own learning processes is proving to be an increasingly important competence, in order to structure
learning not only individually, but also continuously. The possibility of increasingly combining, with the aid of self-organised learning, informal learning experiences from all areas of life with organised learning experiences in initial and continuing vocational training is not only likely to create a new impetus for learning, but is also proving to be the better option, specifically as regards new forms of learning.

As many recent studies have shown, self-organised learning has an important place in the world of work. Surveys in the context of the continuing training reporting system (BMBF [German Ministry of Education, Science, Research and Technology] 1996) and the latest European FORCE survey show that in Germany, for example, the overwhelming majority of people in paid employment frequently acquire further vocational skills by teaching themselves and trying things out in the workplace, and also regard this kind of learning as the most important way of acquiring knowledge (Grünewald 1997).

However, the search for efficient forms of learning has also for some time characterised the efforts of many companies to reorient and develop their own initial and continuing training activities. This is because new forms of work and organisation make increased demands on the ability of skilled workers to direct their own work and take responsibility for themselves. Strategically speaking, new forms of participation and empowerment of employees are becoming increasingly important to safeguarding the competitiveness of undertakings. Today, willingness and ability to learn and participate on the part of employees and groups of employees are regarded as essential, in order to achieve continuous improvements, assure quality, have a market presence geared to customers, and produce intelligent products and services.

These new company requirements for self-organisation make it necessary to use learning on the job more consistently and systematically than hitherto for skills training of all employees and to promote company organisation processes. The efficiency and comparatively cheap nature of this skills training mean that it is increasingly proving its worth in organisational forms such as self-organised learning, which is acquiring growing importance both directly within the work process and in the context of company projects, continuous improvement processes and other models of participation, as a learning and development process not only for individuals but also for groups and organisations.

A fundamental aspect of self-organised learning lies in the fact that by solving work-related problems, specialist and social competences are gradually built up and developed. This happens on the basis of a high level of responsibility for oneself in the skills acquisition process, which promotes personal involvement and the right to a say. Learners should act on their own account within set framework conditions and utilise these in accordance with their own objectives and concerns. At the same time, it is necessary to acknowledge and decide what is required in the way of specialist knowledge and/or what specialist questions require experts to be consulted. Thus people do not learn by applying rules and regulations, but instead they learn to solve problems independently or jointly, in groups, and in the process they learn to cope with uncertainties in social situations.

Lastly, it is also necessary to look at the many misgivings expressed about self-organised learning in a differentiated way. For example, Lipsmeier draws attention to disadvantages and problems of self-organised learning, such as 'encouragement of anonymity because learning becomes very private', 'learning difficulties and also the risk of failure become private/re-privatisation of the continuing training risk', 'isolated learning with little in the way of contact', resulting in 'loneliness and resignation' and 'lack of immediacy, transparency, situational and practical relevance' (Lipsmeier 1991, pp.111 f.).

Furthermore, there are some grounds for fearing that with strict financial calculations in the field of continuing training, and in view of strong pressure on job performance, self-organised learning in the workplace leads to a reversion to simple basic skills. For if insufficient time is made available, virtually no
reflection phases and development periods are allowed, and no specific help is provided, for example in the form of coaching or advice from experienced in-house or external experts, self-organised learning is largely reduced to principles of learning by doing, or learning by watching. However, this type of learning is virtually incapable of developing the capacities required for independent working, dealing flexibly with changing work tasks and, last but not least, independent continuing learning.

3.3 Changing tasks and role of training staff

Company trainers and other skilled workers involved in initial and continuing training play a key part in initiating and designing new forms of learning and realising new learning concepts. The forms of learning described above, self-organised and lifelong learning, and the integration of experiential and deliberate learning are topical and important examples of these new tasks. Staff involved in initial and continuing training in inter-company and external training centres and teaching staff in vocational schools are also confronted with these new tasks, although in a different form. The comments that follow concentrate on training staff in companies, following on from the preceding sections.

The new tasks facing staff involved in initial and continuing training can be clearly seen in the context of changing company skills requirements and objectives such as the acquisition of comprehensive vocational competence and orientation to customer, business and improvement processes. There is a considerable increase in the demands made on training staff as a result of technological and work-organisation developments, the increasing mediatisation and tertiarisation of work, and changing starting conditions and interests on the part of learners. In undertakings with a long history of training, it is also apparent that the hitherto clear divisions between trainers, trainers in continuing training and staff development workers are no longer sustainable. In line with the general integration of tasks, job enlargement and job enrichment in work structuring, the tasks and role of training staff are expanding. This is particularly apparent for ‘traditional’ trainers, in that they have to take on additional continuing training tasks and are involved in various ways in tasks that are part of company organisational development. In individual cases, for example in imparting additional skills and monitoring learning islands, the form involved integrates initial and continuing training. Overall, this means that the quality and scope of skills training for trainers must be expanded and that new training concepts must be implemented. Against this background, the prospective structuring of skills training for full-time trainers and other skilled workers whose tasks include skills training must be geared to two conceptional requirements:

1. Firstly, integration of specialist, social, personal and work- and occupation-related teaching content;

2. Secondly, a structural link with real work, organisational and corporate processes, with processes of organisational and staff development being particularly important.

This integrated and work-oriented concept means that the trainer’s job is fundamentally enhanced in the sense of the relationship to work as defined in 2.1. The tasks and functions of the full-time trainer no longer unilaterally relate to learning sequences in the training workshop, organised into systematic training and vocational education, but in principle involve orientation to teaching and learning processes in real work tasks and real work processes. This involves a range of tasks extending from new teaching methods via supplementary coordination of learning organisation to turning company workplaces into learning venues. There is a radical change in the previous ‘teaching’ and ‘instructing’ activity: this is partially replaced by processes of monitoring, moderation and coaching. As explained in section 3, these methods should be regarded as complementing traditional training and teaching methods, even if they are predominant in some innovative forms of learning and work, e.g. in learning islands and semi-autonomous teamwork.
In principle, these tasks also apply to skilled workers providing training and to other skilled workers involved in initial and continuing training on site. In European countries in which vocational training has made little headway or is less developed than is the case in the Federal Republic of Germany and in Austria, skilled workers involved in skills training on site have an important role in any case, and here too there is a need for skills training for these skilled workers to change and be enhanced (Attwell 1997; Brown et al. 1994; Schön 1983; Young and Guile 1997). Among other things, the emphasis must definitely be on opening up the workplace and structuring it as a learning venue. This task, which involves creating functional learning environments at work, is not without tensions and contradictions. On the one hand, activities in the workplace are subject to economic criteria and calculations but, on the other, the workplace, as a learning venue, must also be assessed in terms of the objectives of work and vocational education. Or to put it another way, the specialist vocational activities of skilled workers on site continue to be based on economic objectives, while the activities involved in work and vocational education are committed to providing comprehensive skills and vocational training.

This area of conflict affects not only trainers and skilled workers whose tasks also include provision of initial and continuing training, but increasingly also people in companies whose jobs involve moderating and coaching tasks in modern work processes, i.e. team leaders and team spokespersons, project managers, quality assessors, organisation development workers, etc. In comparison with full-time trainers, whose numbers are in any case decreasing in modern undertakings, this group, which includes skilled workers providing training, is larger and certainly more important. To give an idea of the relative sizes of the groups, the relative proportions of trainers and skilled workers providing training in the Federal Republic of Germany are, for example, as follows: an up-to-date representative survey by the Federal Institute for Vocational Training has established that there are some 70,000 full-time trainers registered with the chambers, but also around three and a half to four million skilled workers involved in training activities in the workplace (Schmidt-Hackenberg et al. 1999).

It is all the more important to implement new training measures for a broad-based target group. The new forms of learning and work, which integrate deliberate and experiential learning, and promote and require experience-based work processes, must be monitored by appropriately qualified skilled workers. To date, concepts of training for trainers have taken virtually no account of this group of skilled workers, i.e. primarily team leaders and team spokespersons, and project managers and master craftsmen. There is now a need for training measures that equip people to open up learning potential and learning opportunities on site, to structure learning environments and to develop learning approaches in the context of job tasks and job experiences. The training of full-time trainers and other skilled workers involved in training needs to be coordinated and in some cases implemented jointly. The training concept must be geared to the needs of an integrated and work-oriented concept, as mentioned above.

The new Regulation on the ‘training of trainers’ (Ausbildung der Ausbilder, AdA) that entered into force in Germany in November 1998 addresses this need above all by structuring the activities of trainers into seven fields of action (Hensge 1998). The previous subject-based system is dropped, and the emphasis is on promoting competence as regards action, methods and planning, and on building up a new competence for trainers based on action-oriented roles. However, the Regulation has little relevance for other skilled workers, even though there is a justified demand for skilled workers involved in training to be included in the new regulation on suitability of trainers (Steinborn 1999).

An example of a programme targeting other skilled workers is the continuing training on work-oriented learning, for skilled workers involved in training, developed by Bayer AG in Leverkusen (Dehnbostel and Dybowskii 1997/98, pp.121ff.). This programme developed out of the pilot project ‘Continuing train-
ing of part-time and full-time trainers in company applications against the background of changing training requirements, and having been developed in the first half of the 1990s, has been successfully applied in many medium-sized companies. It provides for opening up of the workplace via workplace analysis and the embedding of training of skilled workers involved in training in the framework of company staff and organisational development. The latter has proved to be necessary in other approaches to continuing training for company training work, as opposed to training geared solely to work and vocational education. For training for new or expanded tasks is always associated with questions of status, promotion and remuneration, and the new tasks are usually interwoven with staff and organisational development processes and results.

The continuing training programme consists of the following four blocks, each of which lasts a maximum of two days:

1. conditions and structures for ‘job-oriented learning’, the role of the company and of part-time trainers in initial and continuing training (Block 1);

2. analysis of jobs and activities, tools and processes and their application in the seminar (Block 2);

3. methodological procedures for guidance on ‘job-oriented learning’ (Block 3);

4. specimen work analyses in the company, structuring of ‘educational arrangements’ in the workplace (Block 4).

In the programme, the training is closely linked to the skilled workers’ vocational experience. One key task consists of reflecting company and work situations and, by exploring their own workplaces, identifying and opening up the learning potential and learning opportunities inherent in them. As this workplace exploration is not restricted solely to the tasks arising in the workplace, but also includes the source and objectives of the tasks and the work organisation, it gives rise to a good overview of company correlations and systems. This facilitates rapid and specific action when problems arise and in the event of sudden faults in the process and structural organisation. In the framework of the exploration, systematic thinking and understanding of the context are acquired or at least improved in association with experiences.

Exploration of one’s own workplace and of the learning situations inherent in it is unusual and has no history. Therefore trainers and other skilled workers must learn to make situations that cannot usually be systematically planned manageable via workplace analysis, and to structure them as learning tasks. It is helpful to use methods derived from principles of experience-driven learning. Here too, the importance of experiential knowledge and experiential learning is as great as it is in the context of the new forms of learning and work described earlier. In addition, it is crucial for participants to elaborate the content for themselves. This ensures that it is based on experience and is transparent, and can be transferred to situations in the company. It also means that productive use is made of participants’ skills and their specific personal qualities.

In continuing training, in addition to workplace exploration and workplace analysis, business issues are addressed, e.g. the need to be aware of quality and costs, and in this way a deeper insight into the overall life of the company and its business is acquired. Teaching and methodological exercises are carried out in order to equip skilled workers to deal with learners and so that they develop competence in structuring teaching/learning arrangements. This may be done, for example, from the angle of discovery-based learning, in which work tasks are performed at various workplaces in the company, followed by systematic reflection on them in evaluative discussion. Overall, the teaching methodology of the training programme ensures that different methods, such as individual and group work, visualisation and presentation, are used in such a way as to serve as examples of the actual initial and continuing training activities of skilled workers.

The experience gained in developing and testing this training programme makes it clear
that learning on the job goes further than all three elements of the classic didactic triad of ‘content - teacher - learner’. Here, the limitations of school-based teaching, as mentioned earlier, are clearly apparent. The teaching content can no longer be restricted to the subject content of a particular field, but must follow the trend of being oriented towards events in the company and work organisation as a whole. The person doing the teaching must be in a position to take on the role of ‘arranger’ of work situations with learning content, in addition to those of instructor, moderator and monitor of learning processes. Thus, the role of learners also becomes more constructive: they acquire an opportunity to master tasks relatively independently, depending on their experience, and to learn from this.

Training in the workplace requires a pedagogic arrangement, in the structuring of which all those involved make a specific contribution, as Figure 7 shows.

To prevent misunderstanding, it should be pointed out that the arrangement of the factors, separately and in relationship to one another, should by no means be seen in a rigid and schematic light. On the contrary, the ‘pedagogic arrangement’ is a field of action, which has its own dynamic and its own independent context, and whose situation is governed by the work process. The person doing the teaching is in the centre of the diagram because of the high level of demands he faces. But this positioning should also be seen as dynamic, as the teacher, both as skilled worker and as trainer providing initial and continuing training, must endeavour to give the learner an increasing active, independent role. Over time, his function increasingly becomes that of a ‘learning monitor’, who uses his specialised experience and his knowledge of work and corporate organisation to prepare job tasks in such a way as to facilitate an optimum learning process.

4. Summary: in-company training work as an interface between the vocational training and employment systems

In modern work processes, action as an activity with a specific aim is undergoing a fundamental change. Action determined by planning and preparation of work in narrowly defined
tasks is being replaced by reflective, open and subject-oriented action. In the wake of this development, action-oriented learning and the acquisition of comprehensive vocational competence to act have become guiding principles of vocational training, set against the background of the changes in work processes and the world of work mentioned earlier. In the context of reorganisation and restructuring, work requires different skills, not only because of the regained breadth of fields of activity, but also as a result of structuring options involving open work processes, holistic work tasks and the fine structuring of work organisation. These tasks have in common that they represent renunciation of the Taylorist performance principle, reintegration of hitherto separated work functions, and a high level of control of and responsibility for their own work on the part of skilled workers. Teamwork and autodidactic concepts are a priority, and people are expected to work on their own initiative and to have opportunities to do their own planning and structuring.

The forms of learning outlined relate to action that is both product- and results-oriented and reflective, and is characterised by room for manoeuvre and responsibility. Learning which one organises oneself, which combines experiences and deliberate learning, is intended to make individuals and groups capable of taking advantage of the opportunities for structuring and control demanded. Integrated and self-organised learning, and also lifelong learning, are initially based not on pedagogic aims, but on business aims and aims relating to the development of corporate organisation. Unlike pedagogically based learning arrangements, the emphasis is not on the acquisition of subject-related knowledge and education, and on specific selected relevant activities, but on activities geared to business processes and profitability. Thus self-organised learning is strongly influenced by teamwork and by taking responsibility for work activities involving new skills, and lifelong learning is influenced by the dynamic of corporate innovation and by processes of continuous improvement and optimisation.

In-company training must take as its starting point the primacy of orientation towards action and the subject and, above all, the needs of corporate processes of innovation and organisational development. The approach to the subject and to the relevance of training derived from the logic of economic and corporate conceptional considerations opens up new possibilities for vocational training in relation to work, and calls into question the traditional functional view of continuing training in the company. Continuing training in the company can no longer be seen as adaptation to work organisation and technology, while adult training is defined in terms of giving priority to relevance to the subject of training.

As we have shown, current forms of learning and learning arrangements in companies are distinguished by the fact that an important part is played by the relevance of the subject and the training. Even if the rebirth of learning in companies, with new forms and a new quality, is based on company considerations involving efficiency and reorganisation, this does not stand in the way of an increasingly humanistic justification for company training work and, at the same time, relevance to the company’s operational interests and individual training interests. Not only do the new forms of learning and learning arrangements contribute to the relevance of company training work to the subject and to training, but so too does understanding of organisational development, an understanding aimed both at optimisation of productivity and performance and at increased opportunities for participation and work which stimulates personality.

Training work of this kind in the company has a key function at the interface between the vocational training and employment systems. It essentially relates to entitlement to skills in the sense of mastering the current and future needs of the employment system and to entitlement to training in the sense of autonomy and personal development. These entitlements come together in the guiding principle of the acquisition of comprehensive competence as regards vocational activity, and here the term ‘competence’ covers both the skills aspect and the subjective aspect of reflection and personal development. If the needs of the employment system are directly
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brought to bear in forms of work and learning, the needs of the vocational training system are, in particular, met by means of starting points for learning, and vocational development paths.

As we said at the beginning, vocational training and development paths that are interwoven with the employment system are of particular benefit, since they are characterised by a marked capacity to adapt and react. The increased flexibility and differentiation required have their starting point in vocational training, and via a systematic combination of working and learning they point the way to prospects for development that are particularly apparent in dual and flexible training courses. These training courses bring the employment and vocational training systems together and assign in-company training work the function of a hinge between the two systems. The starting points for a vocational training system that is independent and of equal value, as discussed, and the development of a plural system of vocational training paths should be seen from this perspective.

However, as we stated at the beginning, insufficient account is taken of existing qualifications and certificates in vocational training as regards going on to more advanced paths in the higher education sector, and insufficient recognition and certification is given to skills and competences acquired through experiential and informal learning on the job. This is the case throughout Europe, although there are considerable differences, as established by Bjørngård (1999) on the basis of 15 national studies in Europe on 'non-formal learning'. According to these studies, in some European countries skills acquired informally are already recorded and certified at national level, in Finland and the UK, for example. The studies also show that there is a strong European trend towards developing and applying methods of identifying, evaluating and recognising learning outside formal vocational training institutions.

In order to recognise and certify experiential learning, the results and competences ensuing from this learning need to be recorded, assessed and evaluated. The recording and evaluation must take as their starting point the fact that competences acquired on the job are extremely dependent on work situations and learning potentials. Thus simple, repetitive jobs offer minimal learning potential and opportunities to learn, and virtually no experiential learning takes place in them. On the other hand, in complex work situations full of variety, intensive experiential learning usually takes place, since there is great learning potential and work-oriented learning processes are necessary and possible. A system of evaluation and certification needs to be developed, covering both initial and continuing training, to facilitate transferability and interchangeability between these two field of training, which have hitherto been completely separate. This is a key task for in-company training work in the operational field. Here, trainers and other skilled workers involved in initial and continuing training have a part to play that is just as important as their role in the opening up and structuring of the workplace as a learning venue, as described earlier.

In the context of new forms of learning, differentiated training paths and recognition of informal learning, attention must be drawn to two additional fields of research and development, which should be addressed as a priority in education and training policy and in structuring in-company training work: interweaving of initial and continuing training and interweaving of corporate organisational development and vocational training. It must be assumed that the clear separation of initial and continuing training in some vocational training systems will gradually be abolished and replaced by links and differentiated transition points, as described in this study. Future requirements cannot be exclusively or principally met within initial vocational training, for in a number of major fields of activity it is a long time since it was possible to learn a vocation and practise it throughout one's working life. Even with people who have been working in their occupation for a long time, their current vocational knowledge usually has little in common with the knowledge and skills they acquired in their training. From this point of view, initial training serves,
above all, as a basic prerequisite for entering a skilled occupation.

As a result of the importance new forms of learning and differentiated training courses have acquired in modern corporate and organisational concepts, vocational training could achieve a new strategic dimension for the development of the company organisation. For company reorganisation and restructuring processes are aimed at more than relocating competences downwards, with the desired effect being a dilution and levelling out of the hierarchy. They also involve, rather, a restructuring of forms of work and learning and a redefinition of company learning and development paths, which make a change in company personnel development strategies essential in the medium and long term. This brings with it an opportunity to reposition vocational training in companies, although only on condition that company skills training acquires relatively independent significance in the interrelationship of technological development, changing activities and job-related skills. A corresponding linkage between in-company vocational training and organisational development is indicated in a number of reorganisation processes, and this needs to be intensified.
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