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VOCATIONAL TRAINING

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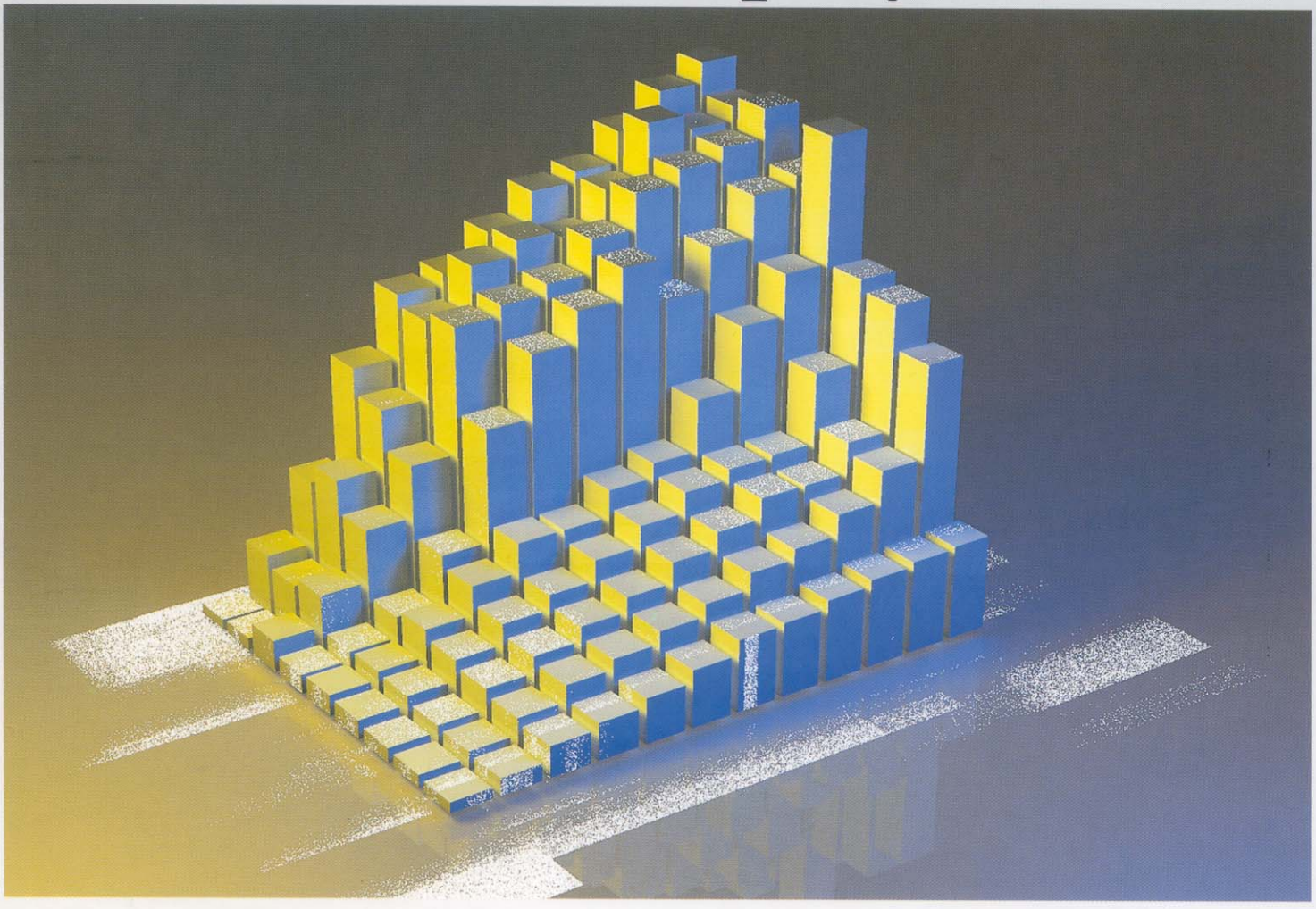
The production of competences in the company



Editorial

For many years throughout the majority of European countries, reflection and the policies pursued attach a great deal of importance to the role of the company in vocational training.

The usual grounds for attributing greater importance to the company's role have been and continue to be the subject of frequent analysis whether it is on account of technological developments, labour organization, the increase in unemployment, the contribution required of vocational training to guaranteeing economic competitiveness.

Company involvement in the training process takes on a large variety of forms which are specific to particular countries on account of the specific nature of each vocational training system.

Thus the involvement of companies - and more broadly speaking - professional organizations in defining the contents of vocational training has been and continues to remain a focal theme in several countries. One aspect of this is the means of regulating training courses on the basis of efficient coordination between industry and the training world particularly in countries such as France where the vocational training system is for the most part based on formal instruction in education establishments for which the state bears responsibility. Great Britain responded in a different manner through introduction of competence classification and independent certification of training in which the companies play an essential role. Here the aim is to give those involved in training - companies or training institutes - grids to improve the efficiency with which the labour market operates and permitting training institutes to focus their programmes on training strands.

Another central issue is, of course, the involvement of the company in the actual training process. The company as **a place of training** is the theme of this edition of the Journal. This is a classic topic often viewed from the perspective of the efficiency of alternance training compared to purely school training. This does not form the approach of this issue which examines the role of the company in training in a different manner.

One question is common to virtually all the articles. Who in the company actually promotes the development of employees' knowledge and skills? What are the internal conditions in a company which are likely to ensure that on-the-job training, informal training or formal training on the initiative of the company generate the competences which are useful to a company? A company is not just a collection of workplaces or training activities. It is also an organization, management tools, a system of mobility, means of recruitment etc. In short, each of the various company dimensions may have an impact on the apprenticeship process of the manpower and on the actual constitution of an employees skills. Thus a company, like any organization, is not simply a means of coordinating the activities of those belonging to it. It is also a means of organizing each apprenticeship and this applies as much to Taylorist organizations as to new forms of organization. It is also a place of acquiring skills and knowledge surpassing those already attained. One will speak of the skills of the company and its occupation.

This reflection on the role of the company in the apprenticeship process and in training is not isolated. It is developing within most of the countries. The French speak of the learning organization, the English of the learning company. The topic in itself is management, and the development of human resources. Attention is no longer devoted to formal training courses but to more complex apprenticeships which are more difficult to grasp but important from the point of view of the companies' competitiveness. The analyses conducted examine firstly the various conditions for carrying out work both as individuals and groups which promote, hamper or structure apprentice-

ships, or on the contrary, create exclusion: mobility, classification, autonomy in work, incentives.

This is a new topic which differs from the perspective of apprenticeship based on the existence of easily identified trades, around which formal and informal training are organized. The article by U. Teichler examines the role of the company and the trade in the organization of training in Germany and Japan.

In this issue there are varied concepts of the company and its role in training:

❏ The company as a training body, that is to say, defining the aims and implementing the specific training means in the case of motor vehicle repair (G. Spöttl) and Rover (J. Berkeley);

❏ The company as a place of apprenticeship in the articles by J. Onstenk and G. Dybowski;

❏ The learning company, particularly in the articles by French authors, P. Zarifian, L. Mallet, M. Campinos-Dubernet, T. Collin and B. Grasser.

A new view of the apprenticeship processes based on work activity within the company emerges from reading these articles. It is no longer a matter of considering apprenticeship at the workplace as the result of individual work activity, possibly supervised. Generating competences should be seen not only as the result of training activity but as an organizational feature, the result of cooperation between individuals.

Jean-François Germe

The production of competences in the company

A view of the debate in France

Changing the design of the apprenticeship process

Innovation in training models: the case of the motor vehicle repair sector

In-company training compared to the training system: the case of Rover in the UK

The occupational qualification and socialization systems: a comparison between Germany and Japan

Reading

Qualifying organisations and skill models:
What is the reasoning behind them?
What learning is involved?

Philippe Zarifian
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In this article, the author asks why qualifying organisations are a topical issue. He pinpoints three reasons: the importance attached to cooperation at work, the problems raised by the trend towards exclusion of part of the working population and young people and the fact that organisational choices cannot be fixed. He shows that a qualifying organisation cannot just be a "learning" organisation. New systems of learning, which make use of but go beyond vocational experience and school education, need to be developed.

The aim of this article is not to attempt to explain what a qualifying organisation is or might be as this has already been covered by previous work[1]. It is rather to look back at the issues that underlie this topic.

A qualifying organisation can be defined, in the simplest way, as an organisation whose construction promotes vocational learning, i.e. an organisation that makes it possible to learn. This definition is obviously not enough, however, exactly to capture what is at issue. Organisations have long been expected to generate what the science of economics calls learning effects. Adam Smith was the first to point out that workers would be likely to acquire considerable dexterity from carrying out the same sequence of actions over and over again. He also felt that the repetition and specialist nature of this sequence would lead workers, looking to make the sequence easier and more efficient, to come up with major technical improvements to its performance.

The new question - if a question can be new - is not therefore to find out what learning effects are generated by the establishment of a simple "learning" organisation[2], but to find out why this question is resurfacing and to pinpoint the new nature of learning.

1. Why have organisational issues resurfaced?

The benefits of cooperation...

Anyone conducting research in enterprise, or at least in those enterprises wishing to make their organisation and management methods more innovative, is struck by the importance attached to cooperation.

This term is rarely used as such, almost as though there were some reluctance to do so. Language may well be used in subtle ways, but it is undoubtedly this kind of "working together" that is meant. Practical examples abound:

- Much has been made of the merits of collective work on the shopfloor, with autonomous teams jointly responsible for achieving their objectives and for regulating and coordinating themselves so that they can shoulder this responsibility.

- There is talk of the decompartmentalisation of functions, interaction and dialogue between divisions which ignored one another in the past. "Horizontal coordination" is gaining ground as a model and is shaping the ways in which enterprises divide up their functions.

- Project-based organisations or, more modestly, multi-trade project groups where different trades and different sources of expertise can work in parallel towards the same goals, are on the increase.

- Attempts are being made to rationalise transverse processes (for instance the process starting with the order and ending with delivery) and it is being discovered that most productivity gains are made by improving (and reducing) the interfaces between the various links of the process.

- People are experimenting with a shift away from subcontracting to partnerships, again based on more intensive exchanges

1) Reference may be made to: Philippe Zarifian, "Acquisition et reconnaissance des compétences dans une organisation qualifiante", Revue Education Permanente, 112, Paris, October 1992.

2) Hence the ambiguity of the term "learning organisation".

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"Anyone conducting research in enterprise, (...) is struck by the importance attached to cooperation."

"What is true, however, is that people do not always perceive the down side of cooperation, i.e. the new divisions that it may well create (...)"

"The reasons for "closer cooperation" are as valid today as the reasons for "separation" and "isolation" were in the past."

and joint work, and are looking for relationships of trust which are stable over time.

❑ New hierarchical profiles are being drawn up where the stress is placed on listening, leadership and dialogue abilities.

❑ Technicians specialising in a particular field are now expected to understand other people's problems, to offer help, to give training and to provide what is a genuine service.

❑ Priority is being given to the customer-supplier relationship: knowing what the other person (the customer) expects from what one is doing and how that person can be satisfied.

"Working together" in every conceivable area therefore seems, in discourse and to some extent in practice, to be a key factor in the actual construction of new organisations. What is true, however, is that people do not always perceive the down side of cooperation, i.e. the new divisions that it may well create:

❑ When autonomous groups are being set up, is some thought given to the risk that these groups may withdraw into themselves and call into question the implicit shopfloor solidarities that existed before?

❑ When functions are "decompartmentalised", is some thought given to the trade identities and areas of relative autonomy that are being destabilised? Does horizontal coordination give everyone the chance to find the place that they consider acceptable? We could put this question to maintenance technicians, for instance, whose "resistance" often comes as a surprise.

❑ When project-based organisations are being established, as in the automobile industry, and all the important decisions and choices are made prior to the launch of these projects, are we sure that we are not making people lower down the ladder even more dependent? While project-based organisation may bring product and process designers closer, are shopfloor workers really involved in this cooperation ....?

Despite the many reservations that an observant person may have, there seems to be little doubt that the model of "closer cooperation" is gaining ground and becoming a new cultural reference point for organisers and is dislodging the model of the separation of tasks and responsibilities from its dominant position.

The reasons for "closer cooperation" are as valid today as the reasons for "separation" and "isolation" were in the past. The fact that they have become commonplace has to some extent helped to make them valid but often stops people from examining cooperation processes in greater depth. Two such commonplace reasons are:

Reactivity: a reactive organisation is an organisation that is able to react quickly and effectively to a change in the economic environment, a quality that seems particularly valuable in the current climate of instability and uncertainty that surrounds growth. Reacting quickly and well means that information has to be circulated rapidly in horizontal networks, closer links have to be forged between problem analysis and decision-making and action and the (re-)actions of the various people in the enterprise have to be moving in the same direction, all of which are good reasons for decentralisation and cooperation.

Integration: whether this comes from the configuration of technical systems or is due to rationalisation and flow constraints, integration necessarily makes the enterprise's various activities more interdependent and requires, to some extent, more intensive exchanges between those people responsible for these activities. Consider, for instance, what is involved in a just-in-time organisation such as SNECMA which is trying to shorten its manufacturing cycle in its factories and throughout its network of suppliers. This is another good reason for ensuring that action is focused, that engine components come in and go out at the right time and that a feeling of interdependence is fostered among a large number of partners.

Does this provide us with a full picture of what cooperation entails? It is here that the issue of qualifying organisations starts to take on an initial meaning: linking up the different knowledge, views and in-

terests which have been formed in a separate, even conflicting, way in the organisation that we are inheriting so that these links can be developed and communicated and so that knowledge is not isolated, rigidly specialised and self-centred.

Organisations become qualifying when they enable and promote this link-up and make it possible for each participant to improve his skills through social contact with other trades and/or social groups, as a function of needs which have a direct impact on the efficiency of the production operation.

The slippery slope of exclusion...

One of the main risks of "new organisations", especially those that stress cooperation and skill enhancement, is that they seem to be powerful machines for selection and exclusion.

A worker who has "got by" for 20 or 30 years may suddenly be told that he is "incompetent" and pushed towards leaving or, more gently but with a no less certain result, marginalised in the organisation of labour and placed outside the circuits of modernisation and the forms that it takes. This exclusion may not just affect adult workers; it has the same effect on young people leaving the education system without certificates or considered to be "inadequately qualified" by employers: they are considered socially "incompetent" without having been given a chance to prove what they are capable of. This is the paradox of these "new organisations": while they can be commended because they provide an opportunity for skill enhancement, they are just as likely to worsen the position of a large number of people.

If we feel that this is an important question, we have to put aside a purely "economic" view of qualifying organisations and ask ourselves whether they are able to provide an answer to the following question: starting from what they are, the variety of the routes they have taken and the knowledge they have acquired, how can employees' skills be transformed so that they can play a more significant part in putting together and developing "cooperative organisations"?

Let us return to our initial definition of the qualifying organisation: acquiring skills **in** the organisation but in a way which is not conventional and which needs for the most part to be invented[3], because the question is itself new.

Organisational choices cannot be fixed

The view that senior management in enterprise held of the organisation, throughout the period of Taylorism, is based on the premise that it is possible to establish a durable system which is not affected by time, wear and tear or changes of context. This is to some extent what is meant by the notion of "scientific organisation", constructed using relatively immutable laws.

This is still a widely-held view. Many managers in large enterprises, assisted by consultants specialising in this field, therefore think that they can set three- or five-year organisational targets and use these to deduce the route that will allow them to move from the current organisation to this new configuration which is again assumed to be fixed. The premises on which such strategies are based are very questionable:

- who says that the situation (economic, technical, social) in three or five years time will be exactly as it is now envisaged? By fixing the objective of and the route taken by organisational change on this target, there is an enormous risk that the objectives that have been set will have to be abandoned en route and that the efforts that have been made, often very substantial, will count for nothing.

- by "basing" change on a target formulated by a few experts, most employees are given a largely passive role: they are asked to take part in a process that they have not requested, whose sense and scope they do not really understand and which is imposed on them without any real choice. This will and does lead to a whole range of behaviour: some employees will play the game and try to make the most of the new opportunities that this change (even if imposed) offers and others, in contrast, will resist or will take little notice and wait for better days...

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"One of the main risks of "new organisations", especially those that stress cooperation and skill enhancement, is that they seem to be powerful machines for selection and exclusion."

"The view that senior management in enterprise held of the organisation, throughout the period of Taylorism, is based on the premise that it is possible to establish a durable system (...). This is still a widely-held view. (...) These premises (...) are very questionable (...)"

3) One of the main merits of the "New Qualifications" mission in France is that it has tackled this problem and tried out new solutions for young people and for adults.

"A qualifying organisation, as it promotes both competence in the organisation and about the organisation, is therefore in a very unique and novel dialectic. It has to enable learning about itself from inside!"

"Routine (...) continues to play a part, but we do not think that it can now be a prime mover of learning."

"Prescription was, in its way, a second major form of learning. (...) However (...), the methods, procedures and ranges defined in this way are increasingly out of kilter (...)"

"School education (...) has and always will have a role to play in formulating basic knowledge." However, it is facing major challenges.

In all cases, target-led change, because it places people in a position where they have to comply or resist, does not encourage them to learn about the key issue which is ... the organisation itself. Employees are placed in a new organisation, but are not given the opportunity to learn what an organisational choice is.

It is only when the fiction of a fixed organisational structure is abandoned, making it possible to question the determinist approach, that we begin to see the interest of:

❑ defining the organisation not chiefly in terms of structure, but in terms of development potential,

❑ involving employees in the design of a change which is not primarily based on a "target" but on an analysis of changing situations.

This means that employees acquire competence **about** the organisation and a genuine organisational culture that can underpin their ability successfully to put into practice these analyses and developments.

A qualifying organisation, as it promotes both competence **in** the organisation and **about** the organisation, is therefore in a very unique and novel dialectic. It has to enable learning about itself from inside!

This has very little to do with an empirical approach. On the contrary: this kind of conception of the organisation presupposes strong principles, but these relate much more to methods of shared organisational learning than to new structures. It is much more important, for instance, to define what a strategy of acquiring autonomy entails than to try to fix what an autonomous team has to be.

The nature of learning?

Having looked at three types of reasons for establishing qualifying organisations, we have already spoken implicitly about the nature of learning.

Routine, i.e. the consolidation, on the basis of experience, of types of action that can be reproduced, has played a major part in industrial practice. Routine continues to play a part, but we do not think that it can now be a prime mover of learning. There are many reasons for this: a growing proportion of routine actions are incorporated into automated technical systems and software and are no longer part of human work; in a context that is very changeable and evolving from every point of view, situations can less and less frequently be based on routines; routines themselves are being questioned from the point of view of "ongoing progress". This does not discredit the experience gained by employees. It makes it necessary to rethink its construction.

Prescription was, in its way, a second major form of learning. It made it possible to organise work and production expertise in a formal way in study and methods offices. This method of capitalisation is in crisis, however: the methods, procedures and ranges defined in this way are increasingly out of kilter not just with the skills actually mobilised in real production situations, but with the increasingly "event-led", complex and to some extent unpredictable nature of the problems that have to be solved in actual work. Individual workers have different problems and priority must be given to solving these problems with the individuals involved. Study and methods offices are not exceptions to this rule: their task is to produce knowledge in the context of the questions and problems that new projects (products, equipment, processes, etc.) raise and for which only partial solutions are known.

School education, structured by subjects, has and always will have a role to play in formulating basic knowledge. It is becoming increasingly evident, however, that:

❑ the positivist premise, which implicitly shapes most teaching, is out of kilter with the challenges posed by real production situations. Sciences are not "exact": they are sets of propositions that claim to be valid but which can be questioned and it is precisely in this way that they can be advanced. This means that scientific education (at whatever level) should make explicit provision for testing practice and for comparisons with other fields of knowledge.

❑ the notion of "basic knowledge" is very nebulous. What is it? How can it be

defined and taught? What, for example, is basic knowledge in relation to autonomous and responsible behaviour? Does the school system have something to say and do in this area and if so, what? Posing the question shows the extent to which the education system, as organised at present, is failing to provide an answer.

❑ everyone knows that production situations mobilise a combination of knowledge from different disciplines. Not only between "applied" sciences (mechanical engineering, electrical engineering, electronics, informatics, etc.) but between these "applied" sciences and human and social sciences. How can we learn about this combination? Are traditional school methods really in keeping with this type of learning?

We are therefore faced with major challenges from the point of view of the form as well as the content of learning; qualifying organisations came into being as a first step towards finding answers.

They raise problems, however, both as regards a definition of their objective (what is the "competence" that is to be learnt in this way?) and methods of social recognition of what has been acquired. Our feeling is that competence is inseparable from production situations and cannot be reduced to "expertise" gained through experience.

On the one hand, this competence can be defined as **an individual and collective intelligence of production situations**, viewed from the point of view of the complex problems raised by their evolution. On the other hand, the acquisition of this intelligence makes it necessary to provide stable frameworks of action that ensure a genuine accumulation of knowledge. These frameworks have more to do with testing systems than with experience, i.e. testing built up within real production situations. Systems to study situations that make it possible to look back at production events (random events, innovations), to analyse their path and to rectify the conditions that have caused them to occur provide indices, although these are still very incomplete[4]. These systems also make it possible for employees to make the most of their experience of events and their capacities of induction and to distance themselves from their immediate assessment of the causes and reasons for these events, thereby allowing a critical review of the initial evaluation of the initial situation.

Approaching competence and its preferred learning methods in this way, takes us away from grading systems based on "time" in the job or in employment, even if its definition were broadened. Everything, or almost everything, has yet to be devised in this area.

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4) We have helped to set up systems of this type in the factories of the company Danone France.

Louis Mallet
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Organizational learning, coordination and incentive

In this article which is somewhat provocative, two largely accepted hypotheses are refuted and two other paths are suggested. The first idea which is refuted is that autonomy in work is necessary for more efficient coordination in complex organizations. New forms of dictates replace the old ones. The second idea which is refuted is that autonomy in work is necessary so that the organization becomes a learning structure. There are constrained but efficient forms of learning.

As against this, the idea presented is that autonomy is an important element for internal incentive and, if training is to become an internal incentive factor, the development of autonomy in work seems to be essential. The only question to be considered is whether this debate is not mainly a Franco-French issue, and to identify the forms it can take in the other Member States of the European Union.

The concept of organizational learning has been the target of much research in the last few years. The starting points of these studies differ because of the imprecision of the concept: some works or experiences are based on the problems of company managers confronted for various reasons with the necessity of improving the efficiency of their work organization (1). Other studies deal with discipline-based problem categories: psychology of work, sociology of work and organizations, scientific management, economics. In this last discipline several currents may be observed: the current which is interested in the social bases of competitiveness, which tries to determine how the new economic facts (internationalization of the conditions governing competitiveness...) or sociological factors (behaviour in action, development of education...) play a role in changing the organizations, and which analyses the principles on which efficient organizations can be built up in these new contexts (2). Another current, strongly influenced by Anglo-Saxon authors, addresses the links between organization and learning. Since the works of Argyris and Schön on organizational learning, several directions of research have developed, for instance, in France the works on project-based organization (3), or those who believe that the concept of organizational learning as such is at the heart of organizational change s(4). The developments at the interface between economics and the cognitive sciences may also be ascribed to this current. Finally, the new micro-economic formalization of the behaviour of the persons concerned - if it can be included in the line followed in the work of the Neoclassical economists - tries to integrate the elements of work as a totality through a study of cooperation mechanisms and the impact of collective knowledge or corporate culture on the efficiency of the organization (5).

The contribution proposed here, the result of work undertaken for CEDEFOP within the framework of the project "The role of the company in generating qualifications"** covers the three economic currents mentioned (6). It examines the central question of the efficiency of organizational learning via two classical approaches: are the problems of coordination handled efficiently in this type of organization? Are answers found for the problems of incentive?

Obviously, these questions cannot be examined without taking a look at the objectives of the organization which in turn are coupled with the environment of the company. The efficiency of the organization cannot be assessed in abstract terms. It is related to the anticipated results. The characteristics of the organization have to be put into a coherent relationship with its objectives (7).

From this perspective, reflections on organizational learning cannot be isolated from the economic and social development of the company, and the general question asked above takes the following form: can organizational learning respond to the new constraints in the company?

The purpose of these questions is quite clear. Our objective is only to open a discussion on these two subjects of coordination and incentive.

Before tackling these points, we will present our definition of the organizational learning concept in order to delineate as closely as possible a field which often has no clear landmarks. Some concluding remarks will be made on the links between organizational learning and prescribed forms of work.

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** Editor's note: a series of national studies, "The role of the enterprise in generating qualifications: the training impact of work organization" is currently being published.

Organizational learning

We would like to give a precise and restrictive definition to the term "organizational learning". First of all, we take the level of the workshop or the work team. We will not be dealing with macro-structures such as the corporate organization of the company as a whole, but with micro-structures such as work organization, division of tasks between individual employees and cooperation between individual persons.

This means we will focus on a precise aspect which is part of a much broader concept. The CEDEFOP study referred to above was intentionally centred on the training impact of work organization, a subject which is narrower than the structure of organizational learning. This limitation also covers national specificities: apparently the Taylorist organization "à la française" was characterized on the one hand by a form of division of labour which stressed the hierarchy, on the other hand by the low level of training of the majority of the employees (8). Furthermore, France is a country with a limited tradition of formal in-company training. For these different reasons, the question of incorporating the process of informal learning in the work organization is of interest and presents some specific features.

We therefore think that an organization has an organizational learning structure when it contains learning opportunities for all or a part of the persons making up the organization. This requires some clarification.

❑ The training element envisaged here does not refer to a training activity at the workplace disconnected with production operations, but to a structure of productive activity which includes training elements. The acquisition or the discovery of new skills is a sub-product of production activity. It cannot take place outside this activity. Learning is not formalized as an operation which serves the specific objective of training. Training is informal but this does not mean that it is accidental or unwanted. The activity of learning does not follow the classical forms of training, it is integrated in work operations.

❑ An organization does not acquire these characteristics by accident. We will be examining the approaches of the actors who, for various reasons which we will take up later, shape the organization so that it includes these training opportunities.

❑ The distribution of opportunities for learning can be extremely unequal within an organization. Several examples of organizational change which we observed showed that these changes often open up possibilities for some persons but exclude them for others. The game does not necessarily end at zero when there is a change in organization, often the emergence of winners and losers cannot be prevented. This also occurs when the same persons move from one organization to another. This is even more true - though not always admitted - when the change in organization is accompanied by changes in persons, or induces these changes or is even instigated to bring them about.

❑ It is probably difficult to imagine that an organization will indefinitely and continuously be a learning structure. A minimum stability in the division of tasks is an efficiency factor. The learning processes themselves are discontinuous. One could therefore imagine that learning opportunities are unequally distributed over time as they are unequally distributed among individuals.

❑ We do not think that it is necessary to make organizational learning the opposite of specialization of individuals. This would be a radical way of assuming that specialization is no longer productive. There are no findings in ongoing work which indicate that this is the path to be followed. The CEDEFOP studies indicate that informal training seems to be an element of differentiation between workers. It could contribute to specialization.

Not only do the links between specialization and learning through repetition remain within the stable areas of the organization, but the flexibility of job definitions can also lead to new forms of specialization. On the one hand, aptitudes and the desire to learn are not equally distributed among workers, on the other hand the complexity of the process and the diversity of the skills required can lead to growing specialization.

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There does not appear to be a visible link between learning opportunities and autonomy in work. The fact that a worker goes in for training is not necessarily linked to an exercise of options. Informal training per se does not call for a situation of autonomy.

It does not seem to be essential to abandon the framework of a hierarchy-coordinated prescriptive organization to obtain organizational learning. Much contemporary work opposes work organizations of a prescriptive nature, characterized by a weak autonomy of the employees, to organizations which give freedom of choice to employees (9). The former are considered to be organizational forms with few informal training options, the latter are considered to be organizations offering new opportunities through the variability of work situations.

"(...) in France at the peak of Taylorism, work organization never meant a total reduction of autonomy."

It is difficult to reconcile this view of the subject with numerous research findings which show that in France at the peak of Taylorism, work organization never meant a total reduction of autonomy (10). It only appeared informally, but it was needed and tolerated. Much has been written about the fact that the organizations could not function without these fluctuating zones where genuine informal training opportunities were possible. The new idea was therefore not to be found in the link between autonomy and training, but in the appearance of the non-prescribed element in formal organizations.

"The new idea was (...) not to be found in the link between autonomy and training, but in the appearance of the non-prescribed element in formal organizations."

Incidentally, we do not think that it is primarily the prescriptive nature of the organization which reduces training opportunities but rather the simple, repetitive and stable nature of activities over a period of time. An organization offers few chances of developing skills if it compels its people to keep repeating the same things, if these things are simple and few, and if this state of affairs continues indefinitely. On the other hand, a prescriptive organization which makes the employee carry out complex operations in a certain time progression, does make it possible to develop existing skills or acquire new ones. It is possible that a work organization does not leave room for autonomy, but through complex prescriptions in various forms, it can introduce a restricted training mode. The constraints and control procedures will be different to those of a classical Taylorist system, but they will guide the employee in his progress. A refusal by an employee or his inability to achieve this progress will be penalized in the same way as the inability to be part of a chain of operations, i.e. through exclusion from the system.

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Numerous examples of these "new prescriptions" may be found in the injunctions imposed by the quality charts, the ISO standards and the lists of specifications for sub-contractors. In these practices there is no evident link between the development of autonomy and the development of skills. The management of a company will naturally try to find systems of standards which will ensure progress. Obviously, these standards will have to be tenable and will have to be incorporated in the form of a contract.

It may be true that the new technologies and the complexity of organizations makes it difficult and costly to apply the classical procedures for control of work, but it would also be erroneous to believe that the only effective response the companies can give is more trust and more autonomy. A quest for organizational structures with new types of constraints adapted to these complex environments is also a possible alternative. Examples of this may be found in the development of management services for production (11).

Organizational learning and coordination

The question of coordination between individual persons is a central issue affecting the efficiency of organizations. The coherence of the productive process depends on the reliability of relations between persons. The time schedules for completion of work depend on the rapidity with which information is transmitted.

The new conditions governing competition put the accent on the following elements:

❑ **Variability of production.** In terms of production levels and types of products, the ability of the organizations to adapt to the conditions of changing demands becomes a decisive element for competitiveness.

❑ **Quality of products.** The second decisive element is the ability to maintain a regular production in line with increasingly precise quality standards.

The outcome of these two demands is the need for new competences: the development of the products and the manufacturing process, the shortening of schedules and the reduction of stocks call for new combinations of technical and organizational skills. In these combinations an essential role is played by modes of coordination. The former model of stable production in long series was made efficient through a far-reaching standardization of job contents and the coordination processes imposed by the hierarchical relationship. The trend towards simplification through homogenization was an acceptable organizational response. But a rupture occurs in this logic when differentiation is not only accepted but even induced in order to meet diverse and not easily predictable situations.

The growing severity of competition brought about by the internationalization of markets also propels developments in this direction. But even if production conditions remain relatively stable, the rise in productivity rates enabled through Taylorist procedures seems to have reached its limits. The idea that a competitive advantage can be gained from a better use of human resources encourages the trend towards differentiation. Finally, it casts some doubt on a work organization which demands the same thing of each person (the logic of conformity) in order to exploit individual capacities which have remained unused up to now and which are most often denied or unknown. There is a shift from an organization which uses standardized, known and identifiable skills, where the preliminary conception of the organization is a set of building blocks with previously calibrated parts, to an organization which can unveil hidden abilities (12). It thus becomes much more difficult to retain the initial image of the organization because the point of departure now is the hypothesis that all the characteristics of the people are not known, and that it is better to take the risk of detecting them rather than avoiding this risk through standardization. In this logic of differentiation, the form of the building blocks is not known right from the start, they emerge in the process of construction.

Obviously, to retain the same metaphor, the employer has to guarantee that the building which is finally constructed has the desired characteristics, and this is why coordination in these new organizations plays a central role. The main difficulty is that coordination no longer consists of managing stable and fixed boundaries between entities (job contents) which are homogeneous for large groups. This configuration enabled a stable-procedure management, but coordination now consists of managing shifting boundaries between the entities which are being led towards differentiation. In terms of the volume and the complexity of the data to be exchanged, the system risks becoming extremely cumbersome and expensive. In terms of the form of these exchanges (relationship between dependence and power), more asymmetrical elements may also be introduced.

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Given these characteristics or these demands, in what form does a structure with this so-called organizational learning present itself?

Firstly, if an organization is to offer training opportunities, it has to be evolutional. The distribution of tasks and responsibilities cannot be fixed once for all. The boundaries of jobs have to be flexible in order to take professional achievements into consideration. But this capacity for evolution cannot entail permanent instability. It has to be well-paced, channelized and organized over time. The coherence of the organization is based on the fact that each person has a certain amount of information on what the others are doing. Instability of this information engenders serious problems.

Another question which arises is who decides on the displacement of the boundaries. What part can be left to mutual adjustment?

Secondly, these organizations are going to move towards differentiation of job contents precisely because of the speed of learning. Starting with identical situa-

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"(...) coordination no longer consists of managing stable and fixed boundaries between entities (job contents) which are homogeneous for large groups. (...) coordination now consists of managing shifting boundaries between the entities which are being led towards differentiation."

"(...) if an organization is to offer training opportunities, it has to be evolutional."

"These organizations are going to move towards differentiation of job contents precisely because of the speed of learning."

tions, two employees are subject to different developments. This individualization poses coordination problems which are similar to those arising from the evolutional factor.

Thirdly, learning pre-supposes relations with the other components in a simple prescriptive structure. Understanding presupposes explanations, it implies time and exchange. An organization which is under constant pressure and always compelled to distribute tasks according to the best available competences (who knows how to do the job and who can do it most quickly) will not offer any opportunities for learning (13).

"(...) learning pre-supposes relations with the other components in a simple prescriptive structure."

On the whole all these factors point in the same direction: the quantity and the complexity of the data to be managed in the organization has increased considerably. It is quite clear that certain characteristics of organizational learning respond to the demands arising from new forms of competition, but it is equally clear that the complexity of coordination has been augmented by the introduction of new learning opportunities.

"Whether the companies establish new areas of liberty for individual initiative or whether they administer complex prescriptive structures, a review of incentive mechanisms becomes necessary."

If this challenge is to be met with success. the companies obviously need rules by which they can play the game. Rules on modes of coordination will probably not suffice in view of the risk involved. Incentive systems have to be a part of this guarantee. Whether the companies establish new areas of liberty for individual initiative or whether they administer complex prescriptive structures, a review of incentive mechanisms becomes necessary. Control does not take place only through coordination but also through the quest for guarantees that the individual employee will perform his work in the way required by the organization. If the company cannot adopt an adapted incentive system, it will probably not be able to discard prescriptive structures.

There are two different forms of incentive mechanisms:

- *the incentive lies outside the activities of the job (salary, bonuses, etc.)*
- *the incentive is built into the job activities (satisfaction of doing the job, of learning, etc.)*

Organizational learning and incentive

Two different forms of incentive mechanisms may be distinguished. In the first form, the incentive lies outside the activities of the job, it appears as a reward for the time and the effort expended. It takes the form of salary, of bonuses, of various advantages which have nothing to do with the inherent activity of the job. The incentive is not a part of the work organization. The schematic Taylorist system belongs to this type. In order to acquire a right to the reward it is necessary to comply with a pre-set standard which is seldom differentiated for the different workers. It is necessary to adhere to the norm.

In the second form, incentive is built into the job activities. It appears in the performance of the job, at the level of the satisfaction of doing the job, of learning, either through identity-related mechanisms or through emulation. If this mode of incentive is to be used, it has to be built into the actual organization of the work. The post-Taylorist systems are of this type for several converging reasons.

Some try to satisfy the demands of the individuals. Better trained, largely constrained by the institutional nature of preset salary scales, the employees feel that the exercise of the job is an important incentive element. In this case autonomy is often preferred to a prescriptive set-up.

Other reasons relate to evolutional changes in the company. The logic of differentiation of employees, introduced for the reasons mentioned above, means that the employee is not required to comply with a norm but, on the contrary, is given the opportunity to distinguish himself.

The question which then arises is to establish to what extent the learning opportunity is an internal incentive or an external incentive.

The external incentive aspect entails a personal investment in order to obtain an upgrade in salary either within or outside the company. In this hypothesis, the individual probably wishes to make the most efficient investment possible. If a prescriptive organization is more efficient, he will endorse it.

The internal incentive aspect entails the satisfaction of learning, of having a job which is not monotonous. Is incentive compatible with constraint in this hypoth-

esis? Is there not a contradiction between the fact of being constrained and the fact of finding the consumption of "learning goods" useful?

Autonomy is not essential for training and it does not guarantee this training. But using learning opportunities as an internal incentive factor means that the individual has a certain possibility of choice. The exercise of choice and the responsibility associated with this are incentive factors. Because, making a choice compels a person to put forward arguments, to take a stand, to rationalize. The level of involvement of the person who exercises a choice is higher than that of the person who applies prescribed instructions.

Depending on the response to this alternative, the work organization options themselves can differ. If this perspective is pushed to the extreme, one could say that the mode of coordination should be selected as a function of the incentive model applied. The more or less prescribed or constrained nature of the work will affect incentive factors rather than coordination factors. This is a view which is a bit banal but which has its followers who believe that basically, the organization as an aggregate of rules and formal procedures through which it establishes a mode of coordination, is of little importance. If the employees are motivated, their performance will be efficient. They will find the means of achieving this. The organization will not restrict them. Thus, the sole objective of organizational options is motivation. They are totally conditioned by the expectations of the employees. There is no one structure which is better than another in terms of the objectives of the organization. A good structure is one which encourages commitment.

A careful examination of the empirical study conducted by CEDEFOP within the framework of the project mentioned above, brings a confirmation of these theses in concrete cases. Some changes in organization have been made with the sole aim - not explicitly stated - of bringing about a change in the incentive system: by changing the responsibilities, by forcing the system of inter-personal relations to move out of stable but often sub-optimal equilibria, by provoking a jolt from the outside which will compel each person to re-negotiate with the others, it is expected that a new investment of the individual will take place. In other cases, the organizational change makes it possible to identify career opportunities for a specific group which is considered to be of strategic value for the future. It is through the re-motivation of a group, and not primarily through a new distribution of tasks 14) that the efficiency of the system will be improved.

At this stage the issue to be examined is the training impact of the organization, not in terms of the efficiency of the coordination structures of the organization, but from the angle of motivation.

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The question can of course be put in both directions: is the opportunity to learn in itself the incentive, or is a specific incentive system required to make people eager to learn? Does the company set up organizational learning in order to motivate its employees or does it need its workers to learn for other reasons; some research on incentives in this context is required. Probably all types of situations will occur. But the development of autonomy in work and the decline of prescriptive procedures are partially linked to this. External incentive modes are compatible with prescriptive procedures but the exercise of choice is probably an essential element of a job which is intended to be an incentive in itself. This means that autonomy is not a compulsory characteristic of organizational learning, it is required more for an incentive system than for coordination mechanisms.

To sum up: in a somewhat provocative manner, two largely accepted hypotheses are refuted and two other paths are suggested. The first idea which is refuted is that autonomy in work is necessary for more efficient coordination in complex organizations. New forms of dictates replace the old ones. The second idea which is refuted is that autonomy in work is necessary so that the organization becomes a learning structure. It is possible to have forms of learning which are constrained but efficient.

"The question which then arises is to establish to what extent the learning opportunity is an internal incentive or an external incentive."

"(...) is the opportunity to learn in itself the incentive, or is a specific incentive system required to make people eager to learn?"

"(...) but the exercise of choice is probably an essential element of a job which is intended to be an incentive in itself."

As against this, the idea presented is that autonomy is an important element for internal incentive and, if training is to become an internal incentive factor, the development of autonomy in work seems to be essential. The only question to be considered is whether this debate is not mainly a Franco-French issue, and to identify the forms it can take in the other Member States of the European Union.

Notes/Bibliographical references

1) Numerous examples may be found in the large French groups (the works of C. Midler of Renault, "Emergence et développement de la gestion par projet chez Renault de 1970 à 1985". Cahiers du Centre de Recherche en Gestion No. 3, June 1989. Meeting in Cergy organized in June 1993 by the Rhône-Poulenc group on the subject "Making change succeed"...).

2) **A. d'Iribarne.** La compétitivité, défi social, enjeu éducatif. Ed. Presses du CRNS. Paris, 1989

3) **R.J. Benghozi.** Innovation et gestion de projets. Ed. Eyrolles. Paris, 1990.

4) **P. Zarifian.** "La compétence, mythe, construction ou réalité". Ed. L'Harmattan. Paris, 1994.

5) See the works of M. AOKI. (Economie japonaise. Informations. Motivations. Marchandage. Ed. Economica 1991) and J. Cremer. (Corporate Culture and Shared Knowledge, in Industrial and Corporate Change. Vol. 2, No. 3, 1993).

6) Contribution to three case studies in the French part of the project. Monograph on a chemical factory and two divisions of an aeronautical company. (F. Allard, L. Mallet, M. Pouget). Available from CEDEFOP. Also see the report on France (M.C. Villeval) and the final report (J. Delcourt and P. Méhaut) in the course of publication, in CEDEFOP.

7) **M. Mintzberg,** Structure et Dynamique des organisations. Ed. Organisation. Paris 1982.

8) The findings of the France-Germany comparison undertaken by LEST are quite clear in this respect. See M. Maurice, F. Sellier, J.J. Silvestre. Production de la hiérarchie dans l'entreprise, Allemagne-France. LEST, Aix-en-Provence, 1977.

9) P**. Zarifian,** "Coopération, compétence et système de gestion dan l'industrie. Communication to the 5th meeting of the AGRH. Montpellier, 18 November 1994. Minutes written by FNGE.

10) **D. Brochier, A. d'Iribarne, J.P. Froment.** La formation en alternance integrée à la production, in: Revue Formation-Emploi, No. 30, 1990. Also see the thesis by D. Brochier, L'entreprise formatrice. Aix-en-Provence, LEST, 1993.

11) See the monographs mentioned above on the aeronautics sector within the framework of the CEDEFOP study (F. Allard et M. Pouget).

12) Such organizations could be a possible response to the problem which theoreticians call "adverse selection". See B. Gazier, "Economie du travail et de l'emploi", p. 235. Ed. Dalloz. Paris 1992.

13) **C. Riveline.** De l'urgence en gestion. Gérer et comprendre, No. 22, 1991.

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Organizational learning and mobility

Operations engineers in the chemical industry

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The article examines the question of the construction of coherence between the new forms of work organization to confront an economy of variety and rules of mobility. The author argues that this coherence is indispensable if these new forms of organization are to be effective and stable. This problem is absolutely crucial in the present context of the 'internal market' in France. On the one hand, the old, currently valid rules are being destabilized as a result of the mechanical reduction of career opportunities linked to cut-backs in manpower and the contraction of hierarchical lines. On the other hand, the increase in initial vocational training provision at all levels of job hierarchy is prompting firms to develop recourse to the "external market". The analysis is based on the category of operations engineers, With further reference to statistical data relating to French industry as a whole.

Organizational learning is a specific configuration of the division of activities and competences and their coordination and reproduction. It has been described by various authors[1], among others Philippe Zarifian, as the most efficient organizational form in the context of an economy of variety[2]. The authors in question regard organizational learning as the best organizational form for a firm to confront uncertainty since in this way it can permanently adapt to unforeseen events. Organizational learning means that an appropriate response can be found not only to the growing heterogeneity of competences to be mobilized, but also to the development of skills divided between the various job categories and company departments. More specifically, this organizational form guarantees both ongoing adaptation and renewed generation of skills.

Moreover, following Argyris and Schon (1978), considerations relating to organizational learning have had the significant advantage of emphasizing action-related competences and competences for action - no meagre result in a country such as France where the school-based training model is largely predominant and the legitimacy of the company as a training location was recognized only belatedly (Barbier, 1992, Brochier et. al., 1990, Jobert, 1991).

Within the multiple debates triggered by this term in the various disciplines - sociology, economics, management - there is however a dimension which seems to have been somewhat neglected, i.e. the relationship between the production of competences in the firm, on the one hand, and the form and rules of mobility in the broader sense of the term (rules of access to jobs and the hierarchy of these jobs), on the other. Indeed, organizational learning as defined is mainly to be found in large firms or undertakings belonging to large groups tending to operate according to the so-called "internal market" model. In France this model was evidently confronted with a structural crisis throughout the 1980s, a crisis which is far from resolved. The coherence of this model was based on a significant increase in manpower and the rudimentary development of initial vocational training. Unlike the internal markets of Germany and Japan (Silvestre, 1986), this model was profoundly disrupted by various factors: cutbacks in industrial manpower, a considerable increase in initial training provision, competition between initial and continuing training and, finally, a lesser propensity among women, now equipped with a higher level of training (thanks to school), to withdraw from the labour market in times of recession. The changes introduced to the operation of the internal market in France are in our opinion by no means irrelevant to the development of organizational learning. Indeed, Hatchuel and Weil (1992), in their analysis of expert systems, rightly refer to the significance of the processes forming and exchanging competences within action and the fact that "it is necessary to understand how bureaucratic, institutional or political processes can inhibit, distort or promote a dynamism and a distribution of competences compatible with current economic requirements".

These competences are increasingly no longer simply being formed within action, but stem "from the reelaboration of elements of knowledge within a context of action" (Hatchuel and Weil, op.cit.). This explains the close relationship between the production of action-related competences and the ongoing legitimatization of new competences thus produced. These competences are not merely dependent

1) cf. "L'organisation qualificante", special edition of the review Education Permanente no. 112, October 1992.

2) This term refers to methods of production entailing both considerable product innovation and a contraction of serial lengths.

"(...) it is indispensable to observe to what extent changes in the rules of access to jobs in career development may influence the development of this new organizational form, organizational learning."

on the form of division of labour adopted, but also on the configuration of "areas of mobility" which construct and organize concrete forms of coordination, or even cooperation. These areas are defined by "the entirety of (written or unwritten) rules, the repeated application of which designs lines of force (of what can be defined) as an occupational area or a qualification area" (Silvestre, op.cit.[3]). These rules structure both the coherence of the content of activity and job profiles and the strata and hierarchies of the industrial world. They are based on a certain representation of the hierarchy of the required competences. As a result, it is indispensable to observe to what extent changes in the rules of access to jobs in career development may influence the development of this new organizational form, organizational learning. These configurations also infer certain effects which are not necessarily consistent with the organizational changes carried out. Our hypothesis is that in the absence of this coherence with forms of mobility, new choices in terms of division of labour are likely to be called into question.

"The systematic construction of action-related competences presupposes the preliminary recognition of their legitimacy and therefore the legitimacy of those producing these competences as being directly involved in the process."

This is to be illustrated on the basis of recent surveys in the field of quality policies[4], showing how the construction of training areas is more or less conducive not so much to the development, but to the "theorization" i.e. the organized, systematic and transmissible construction, of action-related competences.

Action-related competences and the learning area

The new dimension to the current industrial environment is not so much the existence of "action-related competences", long clandestine but now "tacitly" recognized by both executives and management (Jones and Wood, 1984); it is more a question of the recent affirmation of their necessity as an indispensable contribution to company performance. These types of competences are now not only generated and sought, but are also shaped and organized within a theoretical mould which tends to be a real action model. They form an action which is now openly acknowledged as collective with the realisation that the various competences are interdependent.

The systematic construction of action-related competences presupposes the preliminary recognition of their legitimacy and therefore the legitimacy of those producing these competences as being directly involved in the process, which is to a certain extent tantamount to recognizing their status as "experts". However, given the previous situation, this legitimacy is not spontaneously established since it introduces a certain "displacement" vis-a-vis this situation. This is now to be illustrated on the basis of the situation observed in two fine chemical plants belonging to the same group.

In the first of these plants, two systems representing the process quality approach were observed; these were supported by the various players without any real compromise having been possible at the time of the survey. In the first of these systems, progress and the ensuing form of labour organization are perceived under the primacy of a modellizing, mathematically-based representation, whereby automatically registered information on the process is fed by a computing system. In the second system, the quality approach is envisaged as one which should above all solve major dysfunctions, even if it must be content with local sub-optima, favourizing a Kaisen-type "step by step approach", to use the Japanese term. The process department people - engineers and technicians - are advocates of the former model, considering that this scientific type of model corresponds to the state of the art of available competences; they see very little scope for partial and local improvements of a more inductive nature based on process control skills contributed by the operators. In their eyes the operators lack legitimacy and are not recognized as capable of participation in improving process control. Statements, remarks or ad hoc comments on the part of the operators are a priori given little credibility and their opinions are treated with caution. They regard the organization of the conditions under which this information is compiled and precisely processed, including parts of the process regarded as insufficiently controlled, as superfluous.

Sustained efforts by operations management to involve the operators in quality action groups on a voluntary basis come

3) It is more precisely a question of initial or continuing training, vocational or general education; change of firm or rotation of tasks; progression between jobs or the recognition of statuses.

4) This CEREQ-GIP Mutations Industrielles study was conducted in the course of 1994 by Blain C., Campinos-Dubernet M., Marquette C. at three fine chemical sites and two aluminium processing sites; its results are due for publication in the course of this year.

up against the previously mentioned contradictions. Their expectations of the operators stand in crass contradiction to their status and the absence of the legitimacy of their competences. This situation results in real difficulties. Each type of player sticks to his own system of representation, mobilizing resources contributed by his own competences to defend his own point of view. Each refers to the limits of the competences of the other group without a "zone of exchange" being established on the basis of a certain degree of overlapping knowledge, mutually recognized as complementary. This division is largely confirmed by the profiles and rules of job access.

Let us examine the case of the "workshop technician" or operations engineer. His characteristics do not match the operators' profile since he has limited experience of control activities acquired since his recruitment on the external market. Holder of a BTS diploma (Brevet de Technicien Superieur, higher technician certificate [insert no. 1], he was immediately classified under codicil II of the collective agreement [Table 2]. In terms of both his culture, approach and status, he identifies and spontaneously collaborates with the process department technicians and engineer, whereas he finds cooperation with the operators difficult; this is confirmed by the latter. Despite efforts by operations management to stimulate quality action groups and systematically display achieved results and clients' complaints in the workshops, he deplores the growing disinvolvement of the operators, which merely confirms the poor expectations of the process department in their regard. The discontinuity "of areas" is particularly significant in this case.

The situation observed in the second workshop at a different site of the same group, similarly engaged in fine chemical manufacture, is in significant contrast to the first.

In the first case, each type of player sticks to his own system of representation, mobilizing resources contributed by his own competences to defend his own point of view. Each refers to the limits of the competences of the other group without a "zone of exchange" being established (...)"

Table 1

The education system: structure and responsibilities

The education system under the auspices of the Ministry of National Education and the Ministry for Higher Education and Research comprises three levels.

❑ **Level one** comprises pre-primary and primary education.

❑ **Level two** comprises the first and second cycles. The first cycle comprises the 1st and 2nd years of secondary school, the general and technological 3rd year of secondary school, the general and technological 4th year and the pre-vocational classes (CPPN) and preparatory apprenticeship classes (CPA). The first cycle is essentially imparted at secondary school with the exception of the technological 3rd and 4th years, mainly dispensed at a vocational grammar school. A minority of CPA courses take place at apprenticeship training centres (although the students are not actually apprentices, they are included in apprentice training centre statistics). The second vocational cycle (dispensed at vocational grammar schools) comprises the classes leading to the vocational training certificate (CAP) in three years, the CAP in two years and the certificate of vocational studies (BEP) as well as the vocational baccalaureate. The second general and technological cycle comprises the 5th, 6th and 7th (final) years of secondary education.

❑ **Higher education** is imparted in grammar schools for higher level technicians (STS) and prepatory classes for the grandes ecoles (CPGE) in certain specialized schools or grandes ecoles and in the universities.

Special education is partly under the auspices of the Ministry of National Education and dispensed in special classes of first or second level establishments and in specialized centres. The Ministry of Health, Social Affairs and Urban Affairs is responsible for other establishments (socio-educational, medical-educational and medical).

Apprenticeship is a type of alternance vocational training dispensed in the apprenticeship training centres under the responsibility of the Ministry of National Education and the Minister of Agriculture in the case of agricultural apprenticeship training centres.

Agricultural education, under the auspices of the Ministry of Agriculture, covers a wide range of vocational training courses, ranging from the agricultural vocational training certificate (CAPA) to the higher-level agricultural technical certificate (BTSA).

The Ministry of Health, Social Affairs and Urban Affairs is responsible for the training establishments leading to medical and social professions.

Source: Economie et statistique no. 277-278, 1994 - 7/8

Table 2

The Union des Industries Chimiques collective agreement

This agreement comprises three codicils, classifying jobs into three groups:

Codicil no. 1	coefficients 130 - 205; mainly workers and employees.
Codicil no. 2	coefficients 225 - 360; supervisory staff and technicians.
Codicil no. 3	coefficients 350 - 880; engineers and managers.

Although the transition up to a higher codicil is no problem in theory, in practice there are clear-cut dividing lines between the codicils in the employment policies of firms.

In the second case, "due to the existence of shared competences, this situation seems consistent in its architecture, both in terms of the legitimacy of various types of competences and the "interface zones" effectively constructed via the organization of mobilities; but even after eight years of experience it is apparently still not absolutely permanent."

In this case the operations engineer was formerly an operator. Recruited as a worker (codicil I), he was promoted to the position of technician following in-company continuing training. This training course, far removed from the academic scholastic model, was designed to expand process control activity management. Management of technical and scientific dimensions was organized on the basis of a problem/solution approach with a distinct leaning towards interfunctionality (maintenance and analysis). In this case the operations engineer remains a legitimate interlocutor for the related manufacturing services since he has access to the same types of scientific and theoretical competences. However, as a former operator, he is also able to understand and "translate" the experiential competences of the operators. He can therefore act as a broker between discontinuous areas, thus creating genuine complementarity and mutual enrichment of the competences held by the different groups. These competences may be remobilized in a new context - making it no longer necessary to reinvent solutions to the same problems. The result, to a certain extent, is a type of mechanism which is not only the product of a collective interfunctional approach (operations, processes, research and maintenance), but which also becomes a collective asset over and above the group of its initiators.

Moreover, the itinerary of the operations engineer in this workshop also helped to facilitate the process of interfunctional rapprochement. Previously employed in one of the firm's research departments, he had been responsible for major investment at a different site, which had resulted in close cooperation with the technical and maintenance departments. His appointment to the operations management of a whole group of workshops thus followed on from all this experience which was of considerable value in the development and reinforcement of the relevant organizational changes.

However, although this second case is the more positive in terms of its examples of the development of cooperation and rules of access to the appropriate jobs, it would be wrong to regard it as the ideal situation. Due to the existence of shared competences, this situation seems consistent in its architecture, both in terms of the legitimacy of various types of competences and the "interface zones" effectively constructed via the organization of mobilities; but even after eight years of experience it is apparently still not absolutely permanent. At the time of the survey, signs of possible regression could be perceived. The manifested zones of fragility focussed on the new profile of operations engineer; on the one hand he is now promoted via participation in classical school-based training (BTS), the firm having ceased to organize the previous internal course; on the other hand, his future development opportunities and career prospects are not yet really constructed. This problem does not so much concern older engineers (aged 40+), satisfied with their recent promotion after more than 15 or even 20 years of work as an operator in technical configurations significantly transformed by automation.

It is however of direct concern to younger engineeers who acquired the status of operations engineer after approximately five to seven years as an operator. They have expectations of career advancement in return for the improvements in process control in which they participated along with operators and the representatives of other functions.

Faced with this uncertainty and lacking a clearly established occupational reference model, they tend, unlike their older peers, to identify with the model of the classical technician in the maintenance and process departments. It is clear that if the site management wishes to confirm the organizational choices adopted, it will have to clarify the order of priorities in this field.

Transformation of forms of mobility and maintenance of job hierarchy

The relations between mobility and organization within the fine chemical sector of an industrial group described above should be put into perspective against the background of a number of characteristics of French society at the beginning of the 1990s. The difficulties of construction of the legitimacy of operators' competences cannot be disassociated from the mediocracy of the workers' status, whereas the primacy of general and scientific competences over action-related competences is very directly related to the status accorded to general education and the undervalued character of technological and a fortiori vocational training courses (cf. Maurice, Sellier, Silvestre, 1982).

The operating conditions of the internal market in France were profoundly transformed throughout the 1980s whereas, on the other hand, a number of structural forms have remained unchanged and seem out of line with the organizational solutions sought[5].

The mechanical reduction of upward mobility opportunities

The dynamism of the internal market in France was constructed according to characteristics described by the American segmentationalists (Piore and Doringer, 1971). Thus on-the-job training in the workplace was largely predominant during the "years of plenty"; mobility was organized by means of a sequence of undistant jobs whereas labour organization was particularly specialized and hierarchical (cf Maurice et. al., op.cit.). The dividing lines between unskilled and skilled workers were relatively unclear and it was possible to move up the job hierarchy starting off from workers' jobs. In 1970 only 31% of industrial workers in France held a vocational training certificate (CAP); in contrast according to the survey conducted by the Laboratoire d'Economie et Sociologie du Travail (LEST), 59% of their German counterparts held an apprenticeship certificate at this time (Maurice et.al., op.cit.).

From the beginning of the 1980s, the combined effects of several factors led to a decline in vertical mobility opportunities. Major cut-backs in manpower, along with the introduction of leaner hierarchical lines in the second half of the decade, largely contributed to this phenomenon.

These two factors were accompanied by a further element - the increase in the provision of technical and vocational training at all levels of job hierarchy. For example, the (French) level IV vocational baccalaureate was created alongside the BTS and DUT[6] higher level technician training courses which had expanded significantly throughout the 1970s. Initially designed to cater for the categories of specialized workers hardest hit by the process of automation, it spread to the majority of specialized workers and employee categories with the decision to bring 80% of an age class up to baccalaureate level by the year 2000.

Although these changes were indeed largely supported by the educational authorities and teaching staff, they were in fact introduced upon the explicit request of the metalworking and mining industries' employers, the most powerful employers' organization, which was in favour of promoting initial training as a means of confronting technological change rather than upskilling workers in the context of continuing training. This strategy of a general rise in levels of recruitment was largely confirmed by the

"The difficulties of construction of the legitimacy of operators' competences cannot be disassociated from the mediocracy of the workers' status, whereas the primacy of general and scientific competences over action-related competences is very directly related to the status accorded to general education and the undervalued character of technological and a fortiori vocational training courses (...)"

" (...) the opportunity offered by new technologies of at least a partial transfer of intelligence, competences and decision-making scope from the office to the workshop was utilized "not by an upskilling of production workers, but by recourse to salaried employees with a completely different level of education and training"

5) This article does not pretend to describe all the changes which have taken place and the following is limited to those changes which have the most evident impact on the aspects discussed.

6) BTS: Brevet de Technicien Superieur, higher technical certificate
DUT: Diplome Universitaire de Technologie university diploma of technology, cf. inset no. 1

Table 3
The career and mobility survey, 1989

The career and mobility survey is a complementary survey to the employment survey. Only persons born between 1930 and 1959 in active employment or previously employed, with the exception of farmers, were selected for the sample. Of the total of 19 600 persons surveyed, 18 400 agreed to be interviewed.

This particular study mainly concerns those in active employment in 1989 who began their careers before 1960, regardless of whether or not they are currently employed or out of work. In the case of those no longer working in 1989, the circumstances of the career break were examined. Finally, a number of comparisons were made with persons who entered the job market at a later stage, at the beginning of the 1970s: the comparison is only possible with respect to career start. The questionnaire covers three subjects:

❑ events influencing an occupational career: marriages, births (for women only), illness and accidents, events relating to the spouse, a relative, on the one hand, training courses or placements on the other. This is followed by an examination of changes of situation immediately subsequent to this event: unemployment, entry or reentry into employment, change of job, end of employment, change of working hours (part-time/full-time);

❑ occupational situation at specific dates (March 1960, March 1967, March 1974, March 1981 and March 1989) and at the time of first employment, along with residential mobility (between the same dates). First employment refers to the first "real" job, excluding "odd jobs";

❑ occupational future: the chances of staying within the firm, a change of working hours, possible return to a given activity.

Source: Economie et statistique, no. 249 (1991).

"France is (...) in the particular situation of offering access via initial training to each level of the job hierarchy with the exception of supervisory staff, relatively rarely provided by the external market".

diagnosis of researchers who described the impact of technological change on workers' activities in terms of an interruption.....so much so that during the 1980s French industry concentrated on the development of technical services by recruiting young technical graduates from the external market.

Thus the opportunity offered by new technologies of at least a partial transfer of intelligence, competences and decision-making scope from the office to the workshop was utilized "not by an upskilling of production workers, but by recourse to salaried employees with a completely different level of education and training and closer to the designers and promoters of rationalization systems and models" (Lutz and Hirsh-Kreinsen, 1988). These authors add that such a scenario, contested in the case of Germany, seems to be more realistically applicable to France, "largely dependent on the national education system and the meritocratic values and orientations and the selection criteria which prevail within that system for the recruitment of technico-industrial skills".

"(...) a decline in promotion opportunities and privileged recourse to the external market for middle-level jobs, with a corresponding decline in internal promotion, leads to discontinuities in competences and the conditions of development of "shared competences"."

The consequence of this type of choice was an interruption in the opening-up of previous workers' careers towards technical services (Eyraud, d'Iribarne, Maurice, Rychener, 1984). Higher-level technicians see their career development restricted by the recruitment of young graduate engineers. Recently the career prospects of the holders of the new vocational baccalaureate have been significantly restrained by the recent recruitment of higher-level technicians (Veneau and Mouy, 1995).

France is therefore in the particular situation of offering access via initial training to each level of the job hierarchy with the exception of supervisory staff, relatively rarely provided by the external market.

The decline in career opportunities is particularly apparent from national statistics. For example, the results of the 1989 career survey (Table 3) show that promotions have become rarer in all categories and that it has become increasingly difficult for the "under-qualified" to gain promotion. In 1974, three out of five men and more than one out of three women who had started working in 1960 had already acquired a social promotion. In 1989, after 15 career years, 47% of men had been promoted. As from 1975, promotions became rarer for those with 15

working years behind them. Of 100 men who began their careers as skilled workers, 45 were promoted prior to 1974, 18 gained promotion between 1974 and 1989, 2 of whom among the 1974 promotions. Whereas 28% of "under-qualified" skilled workers who began their careers at the beginning of the 1950s had been promoted 15 years later (and 37% of graduates), only 10% of under-qualified skilled workers who began their careers at the beginning of the 1960s had received a promotion 15 years later (31% in the case of qualified workers).

This decline in opportunities is even more marked among the lesser skilled. This shows that the lower one's level of skilling, the fewer one's promotion opportunities and the less likely one is to undergo continuing training, which is mainly addressed to more highly skilled categories.

The effects of these phenomena have been more widely analysed from the point of view of their consequences in terms of the disinvolvement of salaried workers than with respect to their impact on the types of competences mobilized. However it seems certain that a decline in promotion opportunities and priority recourse to the external market for middle-level jobs, with a corresponding decline in internal promotion, leads to discontinuities in competences and the conditions of development of "shared competences". Those in these middle-level jobs have increasingly less experience of lower-level positions. Whereas the newly recruited engineers and technicians are relatively close in terms of approach and type of skills, there is a clear divide between this group and workers. In our opinion this explains the difficulties encountered in the organizational field, sometimes leading to regression following evident progress.

The fact that increasingly fewer workers gain access to technical units which tend to be staffed by a significant proportion of higher-level technicians is problematic, particularly in certain sectors. This is e.g. particularly true of the mechanical and boilermaking industries where the deductive type of approach favoured by the scholastic model is insufficient, unlike the fields of electricity, electromechanics and electronics. The same applies to chemical engineering. Although the solutions adopted have made it possible to react quickly to the technicalization of equipment and activities introduced by automation, they are more problematic with respect to the elaboration of action-related skills, which are after all regarded as strategic.

Similarly, higher-level technicians see their career development impeded by engineers. The recent introduction of access to the engineer's diploma via continuing training for this group does not seem to mark a reversal of this trend.

It therefore seems that the employment and training strategies adopted tend to accentuate the heterogeneity of the skills involved, triggering discontinuities "of areas". This restrains organizational learning and thereby, in our opinion, reduces the possibility of implementing this approach.

It would admittedly be possible to imagine not only vertical but also horizontal career developments in the form of a transfer within the same job level. Such trends are in fact currently developing, in particular for operators, by the integration of the first level of maintenance and quality. Supply flow management and performance control are more rarely integrated. However these enlargements of activity remain largely unrecognized at the level of both classifications and horizontal transfers between jobs. The status of the wage hierarchy continues to generate legitimate aspirations of vertical mobility.

Maintenance of a significant hierarchy of competences and jobs

New forms of organization presuppose a de-hierarchization of competences - which does not seem compatible with the significant disparities in terms of status. Hierarchy of status in fact illustrates the value a society attributes to activities and competences. How can the idea of a growing synergy between the different types of skills be introduced by allowing the holders of these skills to remain far apart in terms of their position on the hierarchical ladder?

One of the results highlighted by comparative studies is the mediocrity of work-

"(...) the employment and training strategies adopted tend to accentuate the heterogeneity of the skills involved, triggering discontinuities "of areas". This restrains organizational learning and thereby, in our opinion, reduces the possibility of implementing this approach."

"New forms of organization presuppose a de-hierarchization of competences - which does not seem compatible with the significant disparities in terms of status."

"In France the mediocrity of the worker's status is linked to the under-valued character of the training courses leading to it. People are directed towards technical and a fortiori vocational education by failure. The primacy of general education still remains largely uncontested."

ers' status in France, above all skilled workers.

This mediocrity is manifested by a wide gap in the wage hierarchies of socio-occupational categories. According to the structural survey on wages in 1986 (Table 4), at the end of the 1980s a highly skilled worker earned 33.7% more than an unskilled worker, but a highly skilled employee earned 36.6% and a high level technician 65.7% more than an unskilled worker. At the same date, an engineer or top manager earned 247.6% more than an unskilled worker and 213.9% more than a skilled worker. In a country such as Germany, wage differentials between blue- and white-collared workers are much narrower. Thus the wage differential between a skilled worker and a manager is 15% lower than in France; this includes the possibility of not declaring higher salaries, defined at comparable thresholds in the two countries and applied at the level of 4% in France, compared to 20% in Germany. Whereas the range of women's salaries is also narrower than in France, there is a wider gap between women's and male workers' salaries in Germany.

It is significant to note that a senior experienced worker earns 40% more than an engineer at the beginning of his/her career in Japan, (Nohara, 1994).

In France the mediocrity of this status is linked to the under-valued character of the training courses leading to it. People are directed towards technical and a fortiori vocational education by failure. The primacy of general education still remains largely uncontested.

"This situation - a significant decline in internal promotion opportunities while differences in status remain - increases the implications of classification at the end of initial training and reinforces the effect of initial training."

The recent opening-up of level V vocational education by the introduction of the vocational baccalaureate does not seem to have changed this situation. The increase in the numbers of level IV* entrants is impressive (Table 1), but those taking the vocational baccalaureate have only made an insignificant contribution to this development. The change of level has mainly benefited general education, the growth of admissions in absolute terms being twice that of admissions to the vocational baccalaureate course in the years 1987-1993. This result is consistent with the logic of the structural functioning of both the education and mobility systems and the social hierarchy to be found within firms.

The longer one remains within the general education system, the greater the opportunity one has of reaching higher levels. In fact, the earlier students leave general education, the more difficult it tends to be for them to continue their education. The opening-up of the streams has not changed the overall logic of the system which is based on the primacy of general education.

This situation - a significant decline in internal promotion opportunities while differences in status remain - increases the implications of classification at the end of initial training and reinforces the effect of initial training. This very logically means a considerable tendency for people to "take the bull by the horns", and make sure their own children are placed in the best possible positions in the school-leaving queue. Since qualifications and the right level offer protection, the whole of society places its bets on level. It being established that there cannot be room for everyone, what economists call the "job queue" more prosaically becomes "playing one's joker", and palming the bad hand of cards off on one's neighbour.

Although continuing training is highly institutionalized (Gehin, Mehaud, 1993), it is not only cut off from initial training, despite recent innovations, but is also its competitor. However solutions adopted for initial training seem to be imposing themselves among the various players and a major consensus has been found (Campinos-Dubernet, 1995).

At economic level, the options taken in continuity with previous reforms are beginning to put France in a comfortable and envied position in many growth industries (high-speed TGV train, Minitel, aviation, telecommunications, armament, etc.; cf. Made in France Tadei, Coriat, 1993). On the other hand, France has almost completely lost its machine-tool sector and is under-represented in the manufacture of industrial equipment. French firms are faced with difficulties in the field of mechanics (Thenard, 1994)

*Editor's note: level IV in the French system corresponds to leaving after the final year and leaving post-baccalaureat education before attaining level III (this corresponds to concluding with a Bac+2 years certificate.

whereas solutions to the problems of the electromechanics and electronics sectors can more easily be found. Training in the field of material transformation, activities such as engineering, mechanical engineering and chemical engineering, fits in badly with the problems of our education system in integrating experimental approaches. The way things work in the real world is not necessarily how it is in theory. This tendency is illustrated by the time lag observed in these fields. It constitutes a penalty in the quality field, particularly with respect to process quality, centrally constructed on experimental approaches (scientific processing of empirical facts).

At social level, the situation is uncertain. The recent strikes at Pechiney, Dunkirk and GEC Alsthom[7] are signals which it would probably be dangerous to ignore. Behind these movements, a new generation of better trained worker-operators, conscious of their occupational potential and the importance of their activities for company performance, are in fact raising the problem of their social status and the gap between their position and those of the other salaried workers with whom they collaborate. Is it possible to set up organizational learning and develop closer cooperation between functions and categories while at the same time retaining the significant gaps between these categories?

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7) cf. "Les apaches" de GEC-Alsthom, D. Rouard, Le Monde, 28 December, 1994.

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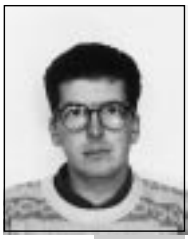

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Classification and new forms of work organisation: what links are possible?

The new forms of productive organisation, set up to encourage the efficient tackling of quality and flexibility constraints in their multiple forms are articulated with the strategies for the mobilization and management of human resources. In this article we have decided to study in particular the issue of constructing reference grids and their relationship to searching for and producing competences. On this account we have based our work on the analysis of eight companies undergoing organisational or technical change.

The new forms of productive organisation, set up to encourage the efficient tackling of quality and flexibility constraints in their multiple forms are articulated with the strategies for the mobilization and management of human resources. From the various arguments put forward to support these links, the following three elements can be derived. Firstly, these new forms of organisation challenge in a major way the division of labour as well as the nature of hierarchical relations. Then, the question of competences is often very important and at least in discussion we are witnessing a reviewing of their role in performance as a whole. Finally, in a context which is marked by permanent change, we observe the growing importance which is given to learning processes, which stress the dynamic development of these new forms of organisation.

Therefore we understand that the question concerning new forms of organisation has to be analyzed in articulation with that of the forms of labour management. Against this backdrop the question of qualifications, the strict goal of which is to regroup jobs, to reorganize them, to reposition them vis-à-vis each other, to assign them a coefficient in line with the qualifications of the work force seems to be of primordial importance. This problem helps us in fact to deal in a static manner with the problems of the positioning of the work force vis-à-vis each other and therefore hierarchical structures and in a dynamic way to take into account the issues of internal mobility and the wave of reflecting competences in remuneration scales.

However, this link between classification and new forms of organisation is worth dwelling on. We have above all to relativise the concept of the competence model, since all enterprises including the most taylorist, use by way of necessity the competences of all their members, competences which emerge from initial and continuing training as well as apprenticeship in a work situation. It seems more interesting to examine the status of these competences in the overall cognitive dynamics. From this point of view we can distinguish between two structures. In the first, competences are viewed above all in respect of the results which they can lead to: each individual is expected to achieve a predetermined and clear result from the outset. The learning process therefore involves developing increasingly efficient and reliable operational procedures. In the second, competences are assessed mainly in terms of knowledge about specific and private processes of production which they represent and the goal of learning is therefore to develop a development, analytical, and communication potential on the basis of that knowledge. In this case, it is also a matter of establishing whether this structure is addressed in a collective manner or whether it remains the appendage of isolated individuals, superiors or individuals explicitly involved in developing and improving the process and the methods.

The new forms of productive organisation set up to promote the efficient management of quality and flexibility constraints are perforce linked with strategies for the mobilization and management of human resources. In this article we decided to examine more specifically the question of qualification grids, their links with forms of encouragement and generation of competences. Here we drew on the analysis of eight enterprises un-

dergoing organisational and technical change.

The idea we wish to develop implies that the structures for constructing qualification grids will vary depending on the multiplicity of the structures for the encouragement and generation of competences. Classifications cannot merely reflect developments in qualifications, but must actively contribute to the process of change.

This question has already been examined in the literature. In this article we will examine it with the assistance of results from more recent research[1], which draws on a sample made up of four pairs of enterprises (two manufacturers of furniture, two suppliers of car accessories, two paper mills and two companies with strong statutes, one in the food industry and one in the steel making industry. This enabled us to take in different forms of labour management bearing in mind in particular the constraints of collective bargaining agreements. For each case the existence of an "event" following which various changes were undertaken in order to set up organisational forms capable of coping with the more or less ongoing situations of change, was the first selection criterion. The following table presents in a succinct form the enterprises studied.

In the cases mentioned above we endeavoured to understand the various underlying structures behind the qualification grids in order to see how they were linked with the forms for encouraging competences.

Classifications

A situation defined by its negative aspects

Against this background classifications are merely seen as a reflection, a snap-shot of qualifications at a given time. In this category we find the traditional qualifications of the sector which are not reappropriated in any manner by the companies and the contents of which remain general (above all on the level of the description of qualification required for each level of classification) in such a way that it does not exercise any major constraints. The main interest behind these classifications was to position the positions vis-à-vis each other and to thus reflect the hierarchy of qualifications.

It should be borne in mind that this kind of classification, which in the final instance is characterized by a minimum level of standardization of recognition of qualifications, does permit by contrast the adoption of a discretionary attitude vis-à-vis the individual or the group. This means it is possible to recognise in an arbitrary manner the sporadic developments of strategic groups or individuals above all on the level of what could be called the "key persons" without there being the collective transmission of the generation of competences.

"(...) the question concerning new forms of organisation (has to) be analyzed in articulation with that of the forms of labour management. Against this backdrop the question of qualifications (...) seems to be of primordial importance."

1) P. Capdevielle, T. Colin, B. Grasser, P. Mehaut, C. Zygmunt, 1995, *Dynamiques organisationelles et principes cognitifs*, research report undertaken within the framework of the call for offers on the subject "Employment, rules signals, controls" of the Ministry for Research and Higher Education, research group on education and employment (GREE), Nancy, France.

Identification	Activity	Workforce	Main Changes
MEUB1	sink units	100	reorganisation of flow with centralisation of production scheduling and replacement of a function orientation with a product orientation
MUEB2	all kinds of furniture	1020	general introduction of numerically controlled machine tools on all production lines
EQUIP1	axle cambers	80	integration of quality and just-in-time standards into motor vehicle production
EQUIP2	control panels and measurement instruments	315	transformation of production units into independent islands
PAP1	wrapping paper	160	technological modernization of paper machines in order to increase the proportion of recycled paper in raw materials
PAP2	high quality paper	250	technological modernization of paper machines in order to access market niches
SIDE	semi-machined motor vehicle parts	550	setting up of a maintenance island
BRASS	beers	390	major change in production procedures by using outdoor tanks and automation of bottling.

"(...) We endeavoured to understand the various underlying structures behind the qualification grids in order to see how they were linked with the forms for encouraging competences."

The classifications are a reflection: "In this category we find the traditional qualifications of the sector which are not reappropriated in any manner by the companies and the contents of which remain general (...) In such a way that it does not exercise any major constraints."

"(...) This kind of classification (...) Does permit by contrast the adoption of a discretionary attitude vis-à-vis the individual or the group (...) without there being the collective transmission of the generation of competences."

The case of furniture manufacturers

In the two furniture manufacturing companies classification is used in the manner defined for the sector as a whole. The two companies have not done anything to adapt the traditional classification to their specific technical or organisational needs. This lack of appropriation of traditional classification is a priori more than surprising since the two companies have very different production conditions: on the one hand a SME working in a niche with a small range of products and the other one of the largest companies in the sector covering the entire spectrum of the market drawing at the same time on economies of scale and the innovative capacity of the product.

At MEUB1, the development of staff competences is not viewed as a necessity. In fact the technical and organizational innovations are the work of a few members of staff selected to work on the most up-to-date equipment and under supervision which acts as an interface between the changes which are thought up by management and their actual implementation in the workshop.

The case of MEUB2 is relatively unique. The company stresses using the competence level of its staff via training which is one of the conditions of change. Although we might be tempted to view this as the establishment of a competence structure, we note that the competences are only mobilized with a view to adapting to the organizational and technical changes which totally by-pass staff given the extreme centralization of the decision-making process and their low level of independence at their workplaces. We cannot therefore in this case describe this as the strategic mobilization of competences and we understand from then on that the appropriation of the traditional qualification in the sector is not necessary.

Classification - an instrument

A management report

In this category we find classifications which are viewed from the outset in terms of their links to the dynamic learning process of the company and this via two main goals.

In the first instance it is a matter of creating categories which correspond to the emergence of new functions or new qualifications. From this point of view we should note the desire of displaying the creation of new categories. This is followed by the formalization of passages from one category to the other which in theory enables staff to peg out a mobility path and to link this with a training strategy.

In a situation of this kind classifications are not merely a distant and nebulous reference in order to establish a hierarchy but help to concretize within the framework of a written standard which is applicable and rejectable by everyone, a link between the "real" qualifications and a position in the classification grid. This is all the more important because credibility has to be given to the emergence of a new model within a context of change and rupture.

This situation is somewhat paradoxical. The establishment of new qualifications aims to allow the production and reproduction of qualifications to be undertaken and standardized. In one word what we are seeing is participation in the management of competences. Now these competences, precisely because they are the result of a learning process, cannot be determined ex ante. Thus, the method of using classifications as a tool for the management of competences cannot be satisfactory because it remains apart from the concrete changes in the production process and work relations which it only takes account of from an external and static point of view.

The case of the car accessory manufacturers

The two car accessory manufacturers have addressed the subject of classification in the metalworking sector from within the framework in which they find themselves. However although this is seen in connection with the technical and organizational changes which take place in the company, the new classifications stem from an a priori approach of management and they

do not include in their concepts the competences which are continuously produced in the work situation.

At EQUIP1, the elaboration of qualification is stimulated by two factors, by workers via their quality approach and by the group to which the company belongs. This development does not really figure amongst the strategic priorities of the enterprise, the company has called on a team of consultants to undertake an audit of existing know how and the know how which will be required in the future. On the basis of that audit the posts have been redefined and rated on the level of the group. However, the application of the new classification grid is encountering real difficulties: the defined positions on the group level do not always correspond to the practices within the company whose production is relatively special. The establishment of this grid was considerably impaired by budgetary constraints limiting the level of retaining possible and by the non-repetition of the assessment interviews. Finally formal training only seems to play a marginal role in the development of staff competences. We have the impression that the company is not giving itself the means of turning classification into an instrument for developing competences. This seems to be confirmed by the fact that, as in MEUB1, the changes in the company are based on a "key person", the workshop technician, the only person capable of acting as a link between work in its concrete form and the way in which it is viewed by management.

At EQUIP2, production has been reorganized into independent cells. This automation of elementary units in the company aims first and foremost to reduce the hierarchical levels. With this in mind, management has done away with the functions of team head, supervisor and workshop head and has replaced them with three positions with the same level of classification, id est the heads of department within a cell[2]. These three individuals play a two-fold role: they are co-responsible for the running of the cell and each of them represents one of the three departments within that cell. However, this reorganization does not envisage hardly any role for the junior operators, decentralization stops at the level of supervision. The heads of the cells given the low level of decentralization are very quickly overtaxed and management had to define intermediate positions for assistant heads which more or less comes back to recreating the hierarchical levels. Since it formalized a change which was not connected to the reality of work, the new classification could but lead to the failure of that very organization, given the fact that it merely recreated intermediate hierarchical positions.

The classifications built

The classification is itself the result of learning process

In a third kind of approach the goal of the classification grid is not only to reflect the development in the content of qualifications but also to stimulate on the level of work situation the development of cognitive potential which will fully integrate the global dynamics of learning in the company. In the companies concerned a choice has been made to recognise that the knowledge of staff, their capacity to be experts in their part of the production process must be taken into account in order both to improve the efficiency of the operational procedures for a given configuration and in order to develop technical and organizational improvements in the production process.

In order to achieve this integration of individual learning, the classifications must be considered as legitimate, as responding to a guarantee of objectivity and of integrating a certain development potential.

The legitimacy of the classification grid is a condition which renders it credible and which will shape its ability to encourage staff to recognise the link between the competences they have and their upgrading within the grid. In order to do this, the ranking of positions, their hierarchy and their formalized content must be the result of a cooperation process between the individuals responsible for setting up the grid and the staff who alone are familiar with the concrete and detailed contents of their post.

The legitimacy of the classification is also based on construction procedures which

Classification - an instrument: "In this category we find classifications which are viewed from the outset in terms of their links to the dynamic learning process of the company (...)"

"(...) The method of using classifications as a tool for the management of competences cannot be satisfactory because it remains apart from the concrete changes in the production process and work relations which it only takes account of from an external and static point of view."

2) a logistics expert in the commercial department, a preparation expert in the technical department and a management expert in the human resources department.

The classification built: "(...) the goal of the classification grid is not only to reflect the development in the content of qualifications but also to stimulate on the level of work situation the development of cognitive potential which will fully integrate the global dynamics of learning in the company."

guarantee a certain degree of objectivity, above all via methods which are called "blind" which allocate the ranking coefficient on the basis of criteria which are evaluated both by management representatives and staff representatives, thereby going through a "black box".

Finally the classifications must be able to reflect forthcoming developments in qualifications mainly via the formalization of the possible transfers between the different levels and by using in the assessment of posts' generic criteria (such as the volume of information treated for example or even the validation of value units) and no longer by criteria which involve describing operation capacity attached specifically to the different posts which are perforce dated and situated.

When classifications become the result of a construction process, we can say that they are the subject of learning.

The case of paper mills and enterprises with strong statutes

The case of paper mills

"In order to achieve this integration of individual learning, the classifications must be considered as legitimate, as corresponding to a guarantee of objectivity and of integrating a certain development potential."

In the paper mills a new professional sector agreement on classification has prompted a levelling of the roles of each person within the company. The classification system envisaged by this agreement takes into account the kind of activity, in addition to criteria such as independence/initiative, responsibility and training/level of knowledge. In the two companies, staff have participated in the preliminary work involved in the definition of positions and they were able to intervene during the phase of their rating. The job hierarchy resulting from the new classification differs considerably from the preceding one and it also differs in the two companies. It could be said that it reflects the technical and organizational changes within each company. Furthermore it is particularly interesting in the two cases studied to see that a same position may undergo very different developments depending on the technical and commercial choices of the enterprise. The position of governor whose job it is to prepare the pulp was one of the positions which underwent most upgrading in PAP1 and one of those that underwent most downgrading in PAP2.

In PAP1 the introduction of a growing proportion of "used" paper makes it more difficult to prepare the pulp and a standardization of production limits the complexity of paper production. Inversely in PAP2 positioning in an upmarket niche gives a strategic character to the production and transformation of paper whereas the position of governor has not been the subject of any technical development. What is particularly interesting here is to see how different take-overs of market signals have led to developments in the trade in two companies: in one case strategic know how is moving upstream (introduction of used paper in PAP1) in the other they are moving downstream (valorization of transformation in PAP2). These two opposing developments in the same trade have led to an inverse development in the qualifications of the position in the two qualification grids. The different development of classification of the same position stresses à contrario the gap which can be the application of the same traditional classification without reappropriation in enterprises of scale, markets and conditions of production which vary considerably such in MEUB1 and MEUB2.

This desire to adopt the new conventional classification goes hand in hand with the recognition of the fundamental role played by the know how of staff. Thus computerization of paper machine control was undertaken in very close cooperation with the staff so as to draw on their knowledge of the concrete operation of the machinery in order to improve them and in order to ensure that the technical developments could be easily and rapidly integrated by the operators.

The case of enterprises with strong statutes

In BRASS and SIDE the process varies because it is integrated from the very beginning in a structure from the management jobs presented as a major axis in the strategy of the company. The competence approach of SIDE, stemming from the application of the agreements ACap

2000 and the relatively similar approach at BRASS have from the outset given importance to training and its validation in the work situation. Classifications in these two companies have been a subject of negotiation between the social partners.

For SIDE this means a direct obligation to set up the competence structure envisaged by the agreements ACap 2000 but this has to be more than the simple application of standards negotiated within the sector. This involves specific work to adapt to the conditions of the company. Individual interviews are one of the mainstays of the structure for management of competences set up following the agreements ACap 2000. In fact it is the evaluation of competences of staff and the interview with the respective superior which must determine the development of the staff member in his trade and to determine the training which might be necessary for him or her. Thus there has to be a move away from the logic of the same qualification for the same position[3]. Qualification will depend on the competences whatever the position held.

For BRASS, this means integration into a different branch of the group which will give rise to a restructuring of the qualification grids. Examination of the development of work within the company led to a redefinition of positions and their ratings. Training and individual interviews are central factors here since skill upgrading training are offered to staff and are necessary in order access specific positions. For example the company was involved in introducing two CAP certificates for the drivers of automated equipment specific to the food industry and these certificates are essential to gain access to positions of line controllers. BRASS has maintained a job structure since a change in qualification is linked to a change in job. However, a step has been made towards a competence structure since staff are very much encouraged to undergo training and the new competences are recognised in the company. A system of this kind can only be viable as long as the increase in competences triggered by the new qualification grid is in harmony with the real development in work within the company. In fact the automation and computer control of production tend to do away with the less skilled jobs to the benefit of jobs in which higher competences are required.

A. CAP 2000:
Agreement on professional activities in steelworks

This agreement was signed between GESIM (group of steel working and mining enterprises) and all the trade union organizations with the exception of the CGT. It has three objectives:

- ❏ to promote a qualification policy which recognises individual competences;
- ❏ to define the conditions for career development enabling each individual to advance in line with his competences;
- ❏ to set up a permanent structure in which each member of staff can position his or herself at all times in his or her professional career.

There must be provision for moving from the position structure with a conventional grid in metalworking to a structure which evaluates competences. The competences are then defined as "validated operational know how" specific to each member of staff and not to the position he or she holds. a CAP 2000 is a framework agreement which must enable the setting up of a competent structure adapted to each site. For a more detailed analysis please refer to C. Gavini 1993 *La gestion prévisionnelle des emplois et des compétences: de la norme aux practiques. Le cas de la sidérurgie*, Travail et emploi no. 57 pp. 49-66.

Conclusion

This brief overview does not permit general conclusions to be drawn particularly given the specific nature of the sectors. This is something which people might erroneously believe on reading the classification which we have identified. Having said that, we have observed different structures behind the elaboration of classification grids. We could observe that the cases which come closest to each other in respect of implementing a competence model that is a model integrating explicitly into its dynamics a general increase in the level of competences do use classification grids which permit a salary increase in respect of these competences on standardized bases (that is written). By proposing transfers from one level to another, by establishing recognition rules for achievements, this type of classification from the very outset is a long term approach and helps to give a relative sense to the concept of the professional project. This first structure takes us back to the classifications which we called constructed since they do not stem from the rigid application of rules defined ex post but resulted form a process of construc-

"(...) the cases which come closest to each other in respect of implementing a competence model (...) Do use classification grids which permit a salary increase in respect of these competences on standardized bases (...) By proposing transfers from one level to another, by establishing recognition rules for achievements, this type of classification from the very outset is a long term approach and helps to give a relative sense to the concept of the professional project."

3) or to continue the move away from the classification of the metalworking sector in 1975 which introduced the concept of classifying criteria.

tion drawing largely on cooperation between the staff concerned and decision makers. By contrast, what we called classifications as instruments, we saw a delinkage between the affirmed message of new management rules of human resources and the reality in production and the links between production at the workplace which did not reflect the replacement of a hierarchical structure with a competence structure. Henceforth we can say that the classification grids on this structure constitute at best a modality in human resources management in respect of form but not of content. Finally, there are organizations in which quality or flexibility constraints can be met successfully without having to adopt a competence approach. Henceforth there is no need for classification to participate actively in the dynamics of organizational change since their role is restricted to reflecting the hierarchy of the different groups of jobs.

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Work-based learning in organisational change in the process industry

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Introduction

Work-based learning is becoming increasingly important in qualifying employees in and for new forms of organisation. Employees undertake informal and intended learning activities at the workplace, closely related to their (future) activities at work.

Modern technology, increased demands from the market and an attempt to combine efficiency and quality assurance are leading to the emergence of new forms of production organisation. Important features of the new paradigm are the team (instead of the separate job) as a basic unit and fundamental unpredictability of the actions that are precisely to be performed (resulting in a greater need on the shopfloor to solve problems). This form of organisation has major consequences for the qualifications and competences required. As well as a greater need in many cases for more declarative and procedural specialist knowledge, key qualifications, an understanding of systems and broadly applicable vocational skills are also important (Onstenk, 1992). In addition, employees also need transfer and career skills in view of the increased demands for flexibility. In practice there are various less far-reaching options, including new forms of Taylorism and 'lean production' (Van Hoof, 1991). However, here too there is increased complexity of functions in many cases, although this is regularly coupled with decreasing autonomy (Steijn and De Witte, 1992).

Methodological, social-communications and strategic key qualifications, new forms of problem-solving occupational activity and an ability to learn independently are important skills required by the 'new' employee. Skills of this kind cannot be acquired solely at school or in initial vocational training. Companies themselves feature strongly as educational institutions in the careers of employees. Employees attend training with increasing regularity,but also have to learn from and during the work itself. Organisational change opens up new opportunities for acquiring qualifications on the job. Intervening in the technical and organisational orientation of the production process at the same time means intervening in the learning opportunities which the job offers. The challenge consists in integrating personal development and organisational development through what could be described as a form of developing qualifications research (cf. Engeström, 1987, 1994).

Work-based learning

Work-based learning is not unstructured learning. The learning simply does not take place in an educational environment (school, course), but instead in the real working situation as a learning environment. It is structured by the features and structure of the working practice within which learning occurs.

Definition

Various usable approaches and concepts have recently been developed in order to analyse informal and integrated learning processes. Both activity psychology and modern cognition science, on the basis of an increasing quantity of research, emphasise the importance of contextual learning in 'real' practical situations. The learning environment in work-based learning is formed by the work situation itself (work task, task management, work organisation and working environment). It is structured by the features and structure of the work practice itself within which employees learn. Work-based learning must be distinguished from on-the-job training, which is characterised by explicit educational structuring, for example via explicitly formulated training objectives and plans: the

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"Work-based learning is not unstructured learning."

"In analysing opportunities for learning on the job, it is therefore necessary to look at the degree to which the various dimensions of the work situation promote, stimulate, make possible and control learning processes. It is possible in this context to refer to the supply of learning as a component part of the learning potential of jobs."

active involvement of a trainer or the use of course material (on paper, PC, video etc.), assignments and tests (De Jong, 1991; Onstenk, 1994). Work-based training is a multidimensional process, which can be differentiated more closely according to the various dimensions of the work activity and the work situation. The social organisation of the working process (cooperation and coordination) plays an important supporting and promoting role in the acquisition of competences. Work itself can be regarded as a learning process: learning in and through carrying out work actions and work activities and through the 'mastering' of problems which arise in the work (Frei, Duell and Baitsch, 1984; Engeström, 1994). Competence is not only acquired by carrying out work, but is associated with the development of the work activity itself (Engeström, 1987, 1994). Skills, knowledge, motives and objectives are integrated into the work activity. The approach of situated learning (Raizen, 1994; Lave and Wenger, 1991) emphasises the 'cognitive apprenticeship' (Brown, Collins and Duquid, 1989) and learning by making use of the physical, symbolic and social working environment (sources of help, social contacts with colleagues and superiors). Learning takes place while the task is being performed, but is chiefly based on the specific physical or symbolic (working) environment. The social environment at the workplace is also important. This relates in particular to the transfer of situation-specific and specialist knowledge and skills through communication with colleagues and superiors.

An important observation in this context is that task performance is closely linked to the culture of the group in which the employee works. This requires the correct 'attitude' among employees (Windolf, 1991), i.e. the incorporation of the culture, norms and values of the vocational group, the firm and the employee's own team. But it also means that employees must learn how to operate in an organisation and how to deal with the various groups in the firm, taking account of the hierarchy and the relationships of power. This type of learning is important not just when entering an organisation (or starting work, as in the case of apprentices in initial vocational education), but also when jobs or the organisation in which one works change radically.

Learning is not restricted to adaptation to (new) requirements in work, but must also be geared towards improvement and innovation (Engeström, 1994). This applies not just to managers and professional occupations, but is also increasingly expected of employees on the shopfloor (Nyhan, 1991; Onstenk, 1992). Critical reflective learning about one's own work - backgrounds, assumptions, action goals - necessitates improving the ability of employees to learn, their independence for reflection and feedback and their willingness to think about problems they encounter in their work, discuss standards and learn how to learn.

The learning potential of work situations

In analysing opportunities for learning on the job, it is therefore necessary to look at the degree to which the various dimensions of the work situation (work task, task management, work organisation, social working environment) promote, stimulate, make possible and control learning processes. It is possible in this context to refer to the supply of learning as a component part of the learning potential of jobs (Baitsch and Frei, 1980; Onstenk, 1994).

The learning potential (see Figure 1) relates to the likelihood of learning processes taking place in a particular work situation. This likelihood is the resultant of the interaction between features of the employees (the qualifications held, learning ability and willingness to learn) and the learning opportunities offered by the job. Expressed differently, work-based learning requires employees who can learn (have sufficient prior training, experience and learning skills), want to learn (motivation and willingness) and have a work situation which offers these opportunities for learning. Work-based learning is governed partly by the learners themselves, who have to recognise, select and either utilise or not utilise learning moments (Simons, 1990) and partly by the working environment. The key aim is an improvement in learning by reinforcing the learning environment. It is generally not possible to formulate specific and detailed learning goals. This signifies a clear difference compared with the provision of training, where precise

goals are set and the effect can be evaluated (Kruijd, 1991). However, this does not mean that a broader assessment of effects would not be possible at the level of the employee (improvement in vocational functioning) or the company (such as productivity, number of errors made and flexibility) or that specific learning processes cannot be analysed.

The learning opportunities in learning directly linked to characteristics of the task and working environment depend on the contents and complexity of the work, the degree to which employees have their own scope for action and decision-making and the opportunities for social contact. Promoting learning at the workplace by broadening the task content and increasing regulating capacity (scope for action) is an important item for attention in change in the organisation of work and improvement in the quality of work (WEBA, 1989). However, the learning culture of the company (the degree to which the company is a learning organisation or an organisation of learning people) is also important (Stahl et al., 1993). Learning is strengthened by offering support and feedback, emphasising reflection and giving scope for self-experimentation and problem-solving. This can be organised in a consultation process or in quality circles, where employees and managers discuss with each other problems in the daily execution of tasks, aimed at finding solutions and improvements. This can also happen more informally during tea-breaks, as in the case of repair fitters of photocopiers, who tell each other 'war stories' about particular machines and customers (Raizen, 1994). In so doing, they 'teach' each other about solving complex and specific problems. An exchange of this kind is partly necessary because the 'correct' execution of tasks is often not technically clear or necessary, but depends on the situation and can be influenced by standards prevailing in the occupation or company (Lave and Wenger, 1991), for example with respect to speed, quality or service.

Diagram 1:
The learning potential of the work situation

A. **Qualifications and learning ability** of the employee:
- Training
- Experience
- Learning skills

B. **Willingness to learn** of the employee
- Motivation for learning
- Active and passive willingness to learn
- Resistance to learning

C. **Supply of learning** at the workplace
- Features of job:
  - Broad content and vocational completeness
  - New problems, methods, techniques, products etc.
  - Internal and external regulating opportunities
  - Good contact opportunities
  - Scope for shaping and decision-making
- Working environment
  - Feedback and explanation by colleagues and managers
  - Information; action; interactive computer simulation
  - Tangible features of the workplace

D. **Supply of training** on the job
- Structuring of learning opportunities
- Participation in innovation
- Structured on-the-job training

Source: Onstenk, 1994

Learning effects of the organisation of work in the process industry

The SCO in 1992 carried out the Dutch part of an EC research project on "The role of firms in the provision of qualifications: Training and the effects on training of the organisation of work in the company" on behalf of CEDEFOP (European Centre for the Development of Vocational Training in Berlin) (Onstenk and Voncken, 1993). The principal question examined in the study was the interaction between the national system for the provision of qualifications (vocational training and adult education) and the development of new forms of production organisation. More specifically, attention was focused on the contributions of firms themselves to the provision of qualifications and the acquisition of qualifications during the career in relation to qualifications obtained in education and training. The study looked not just at in-service training but also at learning during work or the learning effects of the work organisation. Two case studies were conducted in the process industry as part of the Dutch study. The case studies were geared towards a thorough analysis of the work organisation, focusing on in-service training schemes and work-based learning in an executive department. The case studies relate to firms where new forms of

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"The key aim is an improvement in learning by reinforcing the learning environment."

"Learning is strengthened by offering support and feedback, emphasising reflection and giving scope for self-experimentation and problem-solving."

organisation, combined with new technology and computerisation, have recently been introduced. Rapid technological developments are taking place in the process industry, with a sharp rise in investments per job. The nature of the work is changing to a great extent: processing-oriented production processes, characterised by work of a low-trained and highly physical/sensory nature, are being replaced by automated production processes, where the work consists moreof abstract process control, with great responsibility due to the risks of interruptions and the costs of stoppages. This development - which is proceeding very unevenly - is governed, as well as by the introduction of new technology, by increasing environmental requirements and statutory provisions concerned with labour protection, whilst the changing market structure, with heavy emphasis on quality products, also plays an important role (Bilderbeek et al., 1992). In addition, this relates to sectors which have long had a large number of workers with a low level of training and which have a negative image in the labour market, chiefly due to shift work and the low quality of the work.

The work of process operators is traditionally based on practice. Workers usually therefore had a low level of training at the time when they entered the firm. The knowledge required for the process is acquired through a protracted process of slowly rising. It could be said that the starting position in the process industry is formed by work-based learning at a low level. This pattern is changing under the effect of automation and computerisation. Heavy emphasis is being put on know-how and understanding of processes with regard to the product, the market/consumer, the apparatus and machines and the organisation. The new organisation of labour is characterised by group organisation of work, more complete functions (preparation, execution, checking) and integration of simple maintenance and quality assurance into executive tasks. The emphasis is put on work-based learning processes, against the background of organisational innovation.

The penicillin factory

The first case-study concerns a pharmaceutical factory, where the production control system for the bulk production of (starting materials for) penicillin has been radically modified through far-reaching computerisation. The innovation can be summarised in two main constituent parts: automation/computerisation and quality assurance.

The process control has developed from mechanical to automatic, including the introduction of remote control. The function of operator has grown from a narrow executive function to a broad package of tasks (all-round), followed by a phase in which both broadening and specialisation occur. Checking and planning tasks are included in the package of tasks to beperformed by the operators: interpreting statuses, placing orders and monitoring the supply of starting materials. The more complex tasks are regarded by the operators as an interesting challenge and a welcome change in their jobs. Whereas previously practice and understanding were obtained during the work itself, by carrying out the work repeatedly, a reversal is now taking place: an understanding of why something works in a particular way has to be acquired first, before it is possible to intervene. The consequences of actions have to be known. Process knowledge has consequently become far more important. The required level of qualification is rising to the secondary level. Learning processes subsequently take place on this basis at a higher level. The start-up of new factories or processes is increasingly involved. The (possible) chain of causes and consequences is therefore relatively unknown. This makes a learning process necessary: it is still necessary to experiment and gain experience. As a result of working with screens, changes in a sense become invisible: in most cases only the software is adapted. Changes used to be clearly visible on the control panel, through the installation of a new button or measuring apparatus. It has become more difficult to retain an overview of the whole process. Some operators for this reason prefer working with two screens at the same time instead of one screen, whilst others would still rather look at the familiar wall diagram. Because control is remote, an important way of checking by direct feeling (vibrations, sticking, noise) disappears with the production. This makes communication between the control room and

the people who walk around the factory essential.

A second constant feature is quality assurance. Partly in response to the changed qualification requirements in production and partly as a response to market requirements, quality projects have been carried out in recent years aimed at improving the production process. The essence of the total-quality programmes is that every link in the organisation is looked at afresh. The quality of the product and the production, the internal customer orientation and the demand for quality with respect to staff are key topics. A results-oriented way of working is aimed for, specific objectives for each production/market combination and measured data noted by the teams themselves serving as action indicators. Great emphasis is put on the individual and group contribution of employees to quality assurance, by which an appeal is made to their responsibility. This makes mutual communication processes all the more important.

Whereas in the past training was ad-hoc, there is now pre-planned, strategic training, whilst learning and training 'on the job' are becoming increasing important. Both applied learning under the guidance of a company instructor and learning from each other and from the team manager occur. The process operators in the department studied have become more mature and critical. As a result of having more responsibility for work, a kind of 'logistic control' over earlier and later phases in the process arises: employees look beyond the boundaries of their own tasks and speak to each other about the quality of work delivered. People have learnt to question actions which previously were self-evident, are interested in the best way of solving a problem and are willing to learn (from each other).' Learning' has become a selfevident part of the work. Operators themselves more often take the initiative to ask a company instructor, manager or colleague for a detailed explanation. They can also specialise and thus become an 'oracle' for colleagues. The 'ownership' of training and skills is therefore given a powerful impetus. Career policy responds to this, by recognising both all-round and specialist jobs. Opportunities for advancement have been created for operators. Previously an operator could not go further than the level of all-round operator, whereas now opportunities have been opened up to become a specialist through a combination of training and experience.

The factory for cementing and jointing products

Acquiring practice in machine operation is generally becoming less important in the process industry, but still plays an important role in the work process in the second case study, which has changed relatively little. In a factory producing cementing and jointing products which works directly for the consumer market, a radical change in job structure and quality improvement have been carried out, without a far-reaching innovation in the production process itself having taken place. Although parts of the process have been automated, there can still be said to a great extent to be various processing-oriented production states and direct manually controlled production. Innovation relates chiefly to the monitoring and improvement of quality. The most important factors underlying the change are the market and tightened legislation. Two phases can be distinguished in the process of change. The choice of a changing organisational policy in an early phase is found to be an important point of departure from which to make an appropriate response to new problems which the company faces. The new form of organisation (task groups) has primarily been chosen because of personnel problems. When the increase in quality (ISO standard) then presented itself, the new product-group structure was found to be a good starting position.

The task-group concept has been introduced in the first phase of the process of change. This implied adding to the executive production functions of minor maintenance and quality control. Daily production planning is also carried out on the shopfloor in the new structure. This work organisation leads to more varied work, more complex and more broadly composed tasks and more autonomy and scope. There is consequently a greater need for an understanding of the process and of quality and safety aspects. The change in the organisation of work has been linked to a change in the division

"People have learnt to question actions which previously were self-evident, are interested in the best way of solving a problem and are willing to learn (from each other). 'Learning' has become a self-evident part of the work."

"The route from trainee to all-round employee forms an informal, but organised learning path(...)"

"In order to be accredited as an ISO-qualified company, a detailed description is required of tasks and jobs, with risks and problem areas also being itemised. These descriptions are found to be a good basis for discussion in the task group and for the development of workplace-specific training schemes."

"The learning ability of employees is increased by a higher level of training and by developing active forms of learning(...)"

"Willingness to learn is fostered by rewarding learning processes, encouraging the asking of questions and involving line managers(...)"

of jobs. A career path has been created in which employees rise from apprentice to all-round production worker, with - in principle - opportunities to progress to lower management positions. The emphasis is on training on the job under the guidance of a superior or experienced colleague combined with job rotation. The staff assessment system explicitly includes both attending training oneself and work-based learning (particularly through task and job rotation) and contributing to learning processes of others. In this way the acquired knowledge is also evaluated, recorded and rewarded particularly through the job structure and the assessment system. The route from trainee to all-round employee forms an informal, but organised learning path, where employees learn to carry out various tasks in the production process with the aid of explanation and support from superiors and colleagues, and where process understanding, quality assurance and awareness and planning skills are also developed. Alongside this learning path through rotation, an important function is allocated to consultation in the task group, where the swapping of experience and the discussion of problems are encouraged.

In the next phase, where accreditation under ISO 9000 standards is aimed for and greater attention is given to environmental and safety policy, greater emphasis is put on formal training. Aiming for compliance with ISO standards was an important incentive for formalising knowledge. There is an interaction between the formalisation of the production process and formalisation of the training. In order to be accredited as an ISO-qualified company, a detailed description is required of tasks and jobs, with risks and problem areas also being itemised. These descriptions are found to be a good basis for discussion in the taskgroup and for the development of workplace-specific training schemes. Basic qualifications (Dutch, arithmetic) are necessary to improve the functioning of the product groups, to be able to handle production and safety regulations and as a step up to vocational training. Vocational training is necessary to attain the quality standard aimed for. The training schemes are specifically geared towards direct business practice and are given at and around the workplace. Specific courses have been developed both for basic skills and vocational training systems, in which use is made of examples and assignments which directly relate to working practice in the firm. Participants are given the assignment of surveying the safety aspects of their own workplace on the basis of the items for attention and criteria from the reading material. They are also encouraged to ask their superiors questions about the lessons. The superiors themselves are trained to be able to give them answers.

Increasing the learning potential

The case studies afford a good insight into the opportunities and problems in promoting the learning potential of jobs and the integration of learning and on-the-job training. The examples also show that not just the advanced high-tech firms (case 1) but also firms with relatively little process control (case 2) can take steps along the path towards a qualifying organisation. A development is in progress in the process industry towards a new type of training policy that is more strategic and more integrated into company policy and which is characterised by interaction between training and work-based learning. Multi-usable employees with a broad range of knowledge and skills are aimed for. Employees must have more abstract knowledge of systems, develop communicative, planning and organisational skills and bear more responsibility for their own work, which has become more complex.

It emerges clearly in the study that companies can influence various dimensions of the learning potential. The learning ability of employees is increased by a higher level of training and by developing active forms of learning, such as asking questions or carrying out assignments concerned with their own work situation. Willingness to learn is fostered by rewarding learning processes, encouraging the asking of questions and involving line managers in the training and ensuring that they are qualified for guidance, feedback and the answering of questions. As a result, the supply of learning itself is also increased.

We have seen various ways of creating a working environment which stimulates

learning through the design of broad and complete jobs which offer an opportunity to acquire experience of new problems, products, materials and other challenges and which are characterised by internal and external regulating opportunities and social contacts. And we have analysed various forms of an organisational culture which are based on more autonomy and participation of employees, career development and a positive learning climate. The new qualification requirements are leading to an expansion of the training effort, but also to the strengthening of a new type of learning processes on the job and learning in the actual carrying-out of tasks (through job rotation). Attention is given to the interaction between training and individual and collective learning processes at the workplace itself. Because of the non-incidental character of change, a combination of attending courses (as far as possible tailored to the workplace) and learning on the job is of key importance. An increase in activities and aids that promote and support learning on the shopfloor must be aimed for, as far as possible integrated into daily working practice. It is not simply a matter of training material (reading matter, examples, practical assignments) being closely linked to the workplace. Even more important, perhaps, is an expansion in the learning opportunities in the work itself (job broadening; problem-solving) and in learning moments in the mutual communication between members of staff (superiors and colleagues). The group manager is responsible for the preconditions and the overall organisation, within the limits and goals set by the company. The coordinating, motivating, stimulating and training tasks of managerial staff are thus increasing. These people play an important role in the structuring of learning opportunities at the workplace by allocating activities. The task group and integrated jobs promote learning opportunities, the training role of the superior, job rotation combined with guidance from colleagues and explanation being important learning methods.

"An increase in activities and aids that promote and support learning on the shopfloor must be aimed for, as far as possible integrated into daily working practice."

"Even more important, perhaps, is an expansion in the learning opportunities in the work itself (job broadening; problem-solving) and in learning moments in the mutual communication between members of staff (superiors and colleagues)."

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Occupational learning against the background of in-plant innovation processes

- Implications for vocational education and training

The debate on forms of vocational education geared to future requirements is addressing greater demands for generalizable and transferable skills with regard to contents and other aspects. These demands throw a new light on questions associated with the organization of learning processes and, by implication, also on the methods employed in vocational education and training. These new demands are illustrated mainly with reference to in-plant organization and personnel management.

The new context

A number of signs would seem to indicate that the structure of employment is in the throes of change. And this is not only because of the ongoing transition from an industrial to a service society. The fact is that we are confronted with a faster rate of change in organizational structures in production and administration. This is due to new information, communication and control technologies, which are likely to bring a shift in corporate strategies for the use of manpower, and consequently, major repercussions on training practices (cf. Baethge 1988). This is clearly not a universal trend. Virtually all recent studies addressing these developments therefore refer rather tentatively to an approaching reform of work organization away from Taylorist notions of rationalization and towards more holistic and integral work forms. This is not to say that all unskilled, monotonous and restrictive work will be abolished overnight, but there is a certainly a move away from rationalization, since recent strategies focus more on the potential flexibility of human labour and deliberately seek to make use of employees' qualifications.

These changes are being encouraged by the following factors:

(1) a large rise in the past decade in the supply of qualified labour in almost all fields of employment, which companies now take for granted;

(2) the awareness that industrial nations such as Germany are most likely to hold their own in the market by supplying high-quality products, diversifying their product range and gearing their products to clients' individual requirements, rather than through mass production;

(3) the growing realization in production, and even more so in administrative branches, that the best way to satisfy clients' expectations in the market place is to have a well-trained labour force and a form of work organization which leaves ample room for innovation.

These developments have led to new demands on the training of employees. In the production sector, this new type of work has very little in common with conventional manufacturing work on the shop floor. It is essentially geared to indirect planning, controlling and checking functions designed first and foremost to keep machine systems running and in working order, and to maximize capacity utilization of new plant. The manpower required to perform these functions will be expected to have a considerable degree of theoretical knowledge. Employees will require a through knowledge of products and processes, and also sufficient experience and manual skills to step in quickly and effectively in case of disruptions in the production process. Finally, employees will have to be highly flexible, creative, able to work together and willing to learn if they are readily to keep pace with the ever shorter restructuring intervals in production and the various shifts and intermingling of functions and responsibilities in manufacturing and administration.

Similar conclusions have been drawn from studies on the administrative sector (Baethge/Oberbeck 1986), though from a different point of departure, given that Taylorist division of labour in this sector advanced only at the margins to the degree that was long typical of the production sector. Where rationalization processes in the administrative sector are concerned mainly with making in-plant operations more transparent to allow faster and more flexible responses by bringing information flows together, a new form of work organization is becoming established here too for market and client-related commercial activities. The salient features are:

❑ an increase in the complexity of work tasks and an extension of their range;

❑ intensification of work and a concentration on complex relationships;

❑ a tightening of time structures for relevant decision-making processes.

Implications for the organization and design of vocational education and training

The major shifts in production and the administrative sector outlined here are just one side of the mounting changes in vocational qualifications. As things stand today, they can best be described by the demands for:

❑ networked thinking, i.e. thinking and acting in broader contexts, coping with complex systems, and grasping interconnections;

❑ increasing communication and cooperation skills;

❑ innovative potential, creativity and imagination.

The other side is the question of whether vocational education and training is keeping pace with this level of change. The requirements presuppose knowledge and skills which cannot be learned automatically through work and occupational experience, but neither can they be acquired entirely through seminars and courses. They call for:

❑ closer intertwining of working and learning processes in initial and continuing training, and the cultivation of self-learning competences in a group context;

❑ a more systematic combination of intentional learning and learning processes associated with actual work experience;

❑ integration of theoretical and practical learning, and the supplementation of specialized material with multidisciplinary elements that foster core skills and personality development;

❑ self-organized, cooperative learning in teams;

❑ active involvement by trainees in the design of learning processes.

In recent years, vocational training research and ideas on the further development of vocational training practices have therefore focused on three aspects:

(1) Updating and extending the technical contents of vocational education and training. Efforts in this direction have been guided by the aforementioned principles and have sought above all to integrate systematically modern information processing technologies into initial and continuing vocational training. Rather than just passing on the knowledge and skills required for a technical command of certain work tools i.e. specialist training, such programmes seek first and foremost to equip trainees with an understanding of complex technical systems and interrelationships, to teach them problem-solving skills, and to encourage networked thinking. This means developing learning arrangements, whether in the trade and technical or the commercial field, which afford trainees an opportunity to learn in situations they will encounter in real life, in simulated environments and knowledge-based systems. Management games and case studies are key elements of such learning arrangements. They are an attempt to illustrate complex connections in plant and on the shop floor, and to foster decision-making skills. By simulating sophisticated technical systems and

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This points to "(...) a shift in corporate strategies for the use of manpower, and consequently, major repercussions on training practices (...)".

"These developments have led to new demands on the training of employees in the production sector (...) Similar conclusions have been drawn from studies on the administrative sector (...)."

"The major shifts in production and the administrative sector outlined here are just one side of the mounting changes in vocational qualifications. (...)"

"The other side is the question of whether vocational education and training is keeping pace with this level of change."

"In recent years, vocational training research and ideas on the further development of vocational training practices have therefore focused on three aspects: (...)
❑ updating and extending the technical contents of vocational education and training,
❑ learning on the job,
❑ efforts to improve teaching and learning methods."

"(...) no more than a start has been made on transferring and evaluating this form (learning on the job) of organizing vocational education and training."

"(...) the idea of vocational education is no longer just to teach trainees knowledge and skills, but also to nurture the relevant competences."

complex flows, they also seek to promote systematic and analytical thinking (e.g. when diagnosing and rectifying faults) and working practices based on experience. Some manufacturing enterprises are now using simulators of complex production plant for training purposes, in much the same way as airline pilots are trained on flight simulators (see Dehnbostel et al, 1992).

The growing use of new information and communication technologies has also led to new forms of work which call for broader training profiles and initial and continuing training programmes (supplementary qualifications) which include across-the-board skills. This is why there are pilot projects and practical schemes under way to test course contents and teaching methods which aim to teach trainees not only the relevant specialist knowledge and skills but, more importantly, to help them develop interdisciplinary core skills.

(2) Other pilot projects and schemes are concerned with learning on the job (cf. Dehnbostel/Holz/Novak 1992). Having cut direct on-the-job training for decades in favour of centralized training segments based outside the actual plant, large and medium-sized enterprises are now moving in the opposite direction. Trainees spend more time training on the shop floor or in the immediate vicinity of it. This reorientation is mirrored in the establishment of "learning stations" and "learning islands" which form part of in-plant production units, and is backed by a large number of pilot projects. These pilot projects, which were instituted at the Federal Institute for Vocational Training in 1990, are being used to develop and try out new, integral approaches to learning and working and new learning site combinations. Work guided by experience and learning based on systematic, educational principles are integrated in these "learning islands" and "learning stations". What is practised here is not the traditional notion of "learning by doing", but rather work is planned, performed and evaluated systematically from the angle of the learning experience.

The typical method in "learning islands/ learning stations" is group learning and teamwork. There are two major arguments in favour of this approach to working and learning. First, "learning islands" and "learning stations" are intended as settings where new work and technology design concepts can be tried out and experimented with, where teamwork is given priority. Second, group learning is preferred for educational reasons, since it permits self-organized learning and encourages the development of social skills.

One of the main purposes of these pilot projects is to develop checklists of learning targets for the learning islands, setting out technical, methodological and social contents and objectives. They include core skills as well as economic, work and technology design objectives. Work is planned, performed and reviewed in teams to identify process flows and errors, and to discover where there is room for improvements. The principal role of trainers in the learning islands is to supervise and guide the learning process. They are at the same time experienced skilled workers in the respective department of the plant.

Most of the pilot projects are still in progress, so that the final results are not yet available and no more than a start has been made on transferring and evaluating this form of organizing vocational education and training. At the same time, developments to date corroborate the view that integrative methods of combining working with learning are possible and necessary in modern, high-tech work processes.

(3) Efforts to improve teaching and learning methods are a third focus of innovation in vocational education and training. Greater methodological diversity is required in initial and continuing training, since the idea of vocational education is no longer just to teach trainees knowledge and skills, but also to nurture the relevant competences. In today's world, competence means the ability to act in a situation in such a manner that one can cope independently with the situation and the demands it raises. It calls not only for specialized knowledge and skills but also for communication skills, the ability to work in a team and cooperate with others, lateral thinking and systemic action. A willingness to take on responsibility and develop one's creative potential is needed.

However, these abilities can no longer be trained by the traditional four-step method (explain, demonstrate, copy, practise) or in seminars. They depend on learning opportunities and methods which encourage trainees to work independently, both on their own and in teams, give them a chance to learn from experience by searching for errors, solve problems through project work, and foster self-discovery and situative learning.

Numerous methodological innovations have been introduced into vocational education practice over the past few years as a result of pilot projects promoted by the Federal Institute for Vocational Training. The following methods have become widespread:

❑ The **"Leittext" method**. Based on questions analysing the issues involved, it attempts to help trainees to solve a problem independently. The trainees do not receive specific instructions, but are supplied with questions and texts which allow them to find a solution on their own.

❑ The **project method**. This is actually a relatively old method, which was applied in training for trade and technical occupations back in the eighties. It is, however, a new method in the area of commercial training, and is often chosen as a way of having trainees work together on more complex tasks.

❑ **Situative learning and learning by self-discovery**. This is based on the assumption that young people are naturally inquisitive, and that this inquisitiveness is at the root of their ability to assimilate and grasp new material. Apart from introducing them to new course material, this method seeks to foster young people's self-reliance and their personality development.

❑ **Group learning**. This is another form of learning which may be regarded as a training method in its own right and was introduced on a broad scale in enterprises and schools before teamwork became widespread in the work process. Group learning demands precision in the planning, performance and evaluation of tasks, as well as coordination within the group and its representation by a spokesperson. It is a form of cooperation and self-organization which allows young people to gather experience of work and life in general. This experience has a more durable impact on the individual's view of society and on social and democratic rules and conventions than values passed on by abstract means.

There have also been preliminary attempts to incorporate artistic experience and "aesthetic education" into vocational education and training (cf. Brater et al 1984). In the past, pilot projects were conducted at individual enterprises and public institutions, but the approaches they embodied were neither adopted systematically nor developed further in practice. One reason is that these approaches sought mainly to further personality development. However, there would be a need to view practical artistic experience to a far greater extent as an integral component both of personality development and of actual work, which would mean abandoning the traditional distinction between rational, cognitive action and that conditioned by the senses and experience.

New demands on initial and continuing training staff

The trends described towards a modernization and extension of occupational contents, the further development of learning opportunities within the work process, and the diversification of teaching and learning methods call for changes in the tasks to be performed and role to be assumed by training and teaching staff. In future their functions will centre less on conducting seminars and teaching. They will assume the role of trainers, "process consultants" assisting with training and organizational development processes on site. Having established what needs to be done in the specific work situation, they will translate this into appropriate training measures. Such approaches to shop floor supervision and decentralized, on-site training call for personnel managers and trainees as well as departmental staff who are highly receptive to the methods involved and willing to cooperate. No matter who is ultimately responsible for the trainers, it is the personnel management and training departments which

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"If innovations are not only to be speeded up on the technological front but also underpinned by training efforts and personnel resources, learning processes (...) must not only provide training in the respective specialization, but also incorporate across-the-board core skills."

This integration "(...) depends on methodological reforms. Instead of knowledge being handed down from above, the work process - and thus also the learning process - is designed by the trainees (...) an approach which - seen from the methodological angle - includes learning situations (...)."

have to provide the back-up for supervision and training on site. By the same token, departmental executives have to supply the organizational and institutional framework for this process through technical advice, planning and coordination.

Vocational education and training then is a focal aspect of organizational development and personnel management, and places new and very complex demands on the organization of training in enterprises (cf. Dybowski/Haase/Rauner/Schmidt 1993). If innovations are not only to be speeded up on the technological front but also underpinned by training efforts and personnel resources, learning processes must be geared to providing the competences required for the trainees to use new technology and become active participants who help to shape their own working environment, i.e. they must not only provide training in the respective specialization, but also incorporate across-the-board core skills. This integration, however, means more than just extending the range of vocational training measures. It depends on methodological reforms. Instead of knowledge being handed down from above, the work process - and thus also the learning process - is designed by the trainees, who contribute their experience and problemsat work to the learning situation and thus articulate an immediate training requirement. This not only implies a different relationship between training and practice, but also an approach which - seen from the methodological angle - includes learning situations where conventional forms of instruction give way to a bidirectional dialogue between trainers as experts in their fields and trainees as experts in their work.

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Innovative continuing training concepts as a response to challenges in the European motor vehicle service sector

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The challenges facing workers in the motor vehicle repair sector were more or less stable up to the end of the 1970s. Since then, however, there has been a radical change which may be observed in the trend towards quality servicing stations. They must be able to withstand international competition. This entails numerous requirements such as the advent of a universally skilled motor vehicle mechatronic and a constantly rising need for continuing training. Of the different strategies which may be applied to meet this growing volume of continuing training demand, the development of computer-assisted tutorial working systems with "learning" software which combine work and learning seems to offer the best prospects for the future.

Introduction

The motor vehicle industry in the West has in the last few years reacted with success to the superiority of the Japanese lean production concept. More attention has been paid to the "Design of a successful sales and service concept", which in the MIT Study[1] was represented as one of the key problems today. In the last resort this is the point at which a customer decides which motor vehicle make he wishes to buy and whether he is satisfied with the service performance of "his" repair shop or his dealer.

Today, motor vehicle manufacturers all over the world are able to offer vehicles whose comparative quality is equally high. Success in competition is becoming less dependent on the attributes of the vehicle. The quality of the service offered by motor vehicle dealers and their repair shops plays a decisive role in ensuring greater success in competition.

In the motor vehicle sector competitiveness depends directly on occupational skills in the field of services. To an increasing extent, the type and comprehensiveness of the service determines the survival of motor vehicle makes on the world market.

The challenges facing the quality servicing station in international competition

Quality competition and quality service

Without efficient service at the highest level the European motor vehicle industry will not be competitive either within Europe or on third country markets. The FORCE studies[2] show that structural change in the motor vehicle sector is heading towards high quality service. In the European countries however, this trend has reached very different levels and there are still no indications of when and where it will end.

In contrast to Europe, where the transition from a handcrafted motor vehicle repair shop to a modern motor vehicle service centre is still in its infancy, this development has virtually reached its end in the United States of America. Motor vehicle enterprises in the USA are first and foremost service centres. Mega-dealers and multi-franchisers predominate. Customer satisfaction is the aim of motor vehicle service. The mechanics and the service staff have to be supremely efficient. Written and oral interviews are carried out to ascertain the satisfaction of the customers. They become the determinant for the retention and career advancement of the staff, and this applies both to beginners and the General Manager. The motivation for high performance and workers' skills are stimulated by an - in principle - indeterminate work contract and very high individual earnings, even though the basic wages are extremely low.

1) Womack/Jones/Roos: Die zweite Revolution in der Automobilindustrie, Frankfurt/New York, 1993.

2) Rauner/Spöttl/Olesen/Clematide: Beschäftigung, Arbeit und Weiterbildung im europäischen Kfz-Handwerk. CEDEFOP 1994

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"In contrast to Europe (...) motor vehicle enterprises in the USA are first and foremost service centres."

"All over the world the technological dimension of the motor vehicle sector is undergoing a powerful trend towards convergence. (...) But, considerable differences are found if the motor vehicle repair shops and the structure and content of work on motor vehicles are examined, or if the vocational qualification of the workforce and the national continuing training systems and institutions are surveyed."

Furthermore, customer satisfaction has become the yardstick not only for the success of a service station but also for the international competitiveness of a motor vehicle manufacturer. Manufacturers and dealers have to be particularly careful that the numerous and diverse demands, listed in **Table 1**, are fulfilled. These are greatly dependent on the ability to fulfil the wishes of the customer and to improve the relations between manufacturer and dealer. Particular attention must be paid to those conditions and obligations which will make European service concepts competitive on third country markets.

Changing tasks lead to changes in job design

The trend towards a confusing variety of motor vehicle models which as high-tech products incorporate a technology with high integration and modularization, goes hand in hand with a reduced frequency of repairs. Longer service intervals and the extension of guarantee periods show that a radical change has occurred in repair shops:

- ❏ Classical mechanical repairs are being replaced by the exchange of aggregates (engine, gears, control devices, etc.);
- ❏ Skills in the use of diagnostic systems are becoming more important and necessary;
- ❏ The percentage of repair activities for computerized and micro-electronically controlled aggregates is minimal;
- ❏ Repair means that an aggregate is exchanged; bodywork and accident-related repairs are increasing;
- ❏ The main task of the repair shop is diagnosis and standard servicing.

The ability to master these tasks requires an intensive knowledge of the motor vehicle system - as far as it is relevant for servicing and repair - and methodical competence.

- ❏ What tools and media can I use to make the motor vehicle and its current state transparent?
- ❏ How can I detect a fault quickly with or without diagnostic equipment?

The modern motor vehicle repair shop clearly reflects this change in tasks. It is mainly oriented towards service, maintenance and fault detection, it is equipped with the most modern diagnostic and expert systems and considers this to be a support function for the motor vehicle trade.

In future the essential requirement is not only technical aptitude but also a highly developed awareness of quality and the ability to carry out repairs quickly and correctly, even without being supervised by a superior.

All over the world the technological dimension of the motor vehicle sector is undergoing a powerful trend towards **convergence**. Everywhere motor vehicles which are more or less similar are to be found. That is why, all questions related to the product "motor vehicle" are not problematic. But, considerable differences are found if the motor vehicle repair shops and the structure and content of work on motor vehicles are examined, or if the vocational qualification of the workforce and the national continuing training systems and institutions are surveyed. All the more so if vocational training is examined in the context of corporate development (organization, changing tasks) or viewed in terms of technological change.

Innovative forms of work organization and qualification

Manifold requirements reduce the possibility of splitting tasks into various subactivities. Any person who works in a repair shop with a customer-oriented form of work organization has to perform several tasks at the same time. Flexibility is essential. Otherwise, there is no way of coping with the rapid changes in tasks.

This leads to a new definition of tasks. Repair shops which believe that there is no future in a high degree of specialization, design their tasks in such a way that the workers in the different sections are highly flexible. All-round tasks in small repair shops or work organization based on the team concept are the solutions to these requirements.

In Europe, division of labour according to the specialist model - a specialist al-

Table 1:
Global demands on quality service in the motor vehicle repair shop from the angle of the company, the customer, the manufacturer, society and the State

Subjective demands of the company	Customer demands	Demands arising from dealer-manufacturer relations	Demands of society and the State
- Product and sales support from the manufacturer - Marketable product - A vehicle which is easy to maintain and repair - Structure of service and work organization - Design of work (humane, safe, varied) - Structure of customer relations - Ensure customer loyalty - Learning opportunities in the work process	- High level of driving comfort in the motor vehicle - Motor vehicle: low maintenance requirements with long service intervals - Easy-to-service vehicle - Quality service - Personal advice and guidance - High level of road and traffic safety - Low operating costs	- Structure of dealer-manufacturer cooperation. Independence of the repair shop and influence exerted by the manufacturer - a contradiction - Repair shop: optimal quality service - Manufacturer: highest quality service and compliance with quality standards	- Regulations Authorizing the Use of Vehicles for Road Traffic - Safety requirements - Environmental legislation - Ecological and economic operation of the vehicle - Low exhaust fumes and compatible with the environment - Technical prescriptions (e.g. regular technical road safety inspection by the authorities) - Regulation through standards (DIN / ISO / ECE / SAE / FM-VSS) - High level of road and traffic safety.

ways does one specific task - is widespread despite the trend towards the quality servicing station. Continuing training provision is also a reaction to this specialization. Specialists attend "their" special courses in the customer service schools.

Innovative concepts such as the "All-round Model" - one skilled worker performs a broad range of tasks - call for a high level of qualification in the repair shop. They raise the flexibility of business management and work organization and also the motivation of the employees. Their job satisfaction increases. This model is widespread in the USA. There, one mechanic does all the work on a motor vehicle and is responsible for correct execution. In technical terms the "All-round Model" is geared to the growing integration of systems. From the angle of "quality service" it gives the customer a chance to communicate directly with his "own" mechanic. This ensures sound customer relations.

The team concept as a best practice form involves considerable organizational and qualification-related innovations. It facilitates more powerful customer orientation in the service sector and the integration of older or lower-skilled workers. This model requires qualified mechanics with a broad range of skills. It does not compare or counterbalance qualifications or polarize them. The teams consist of 5 to 7 persons, they have broad margins for planning and scheduling work and are responsible for a job order from the moment the vehicle is accepted up to the final inspection and return of the car to the customer.

Vocational qualifications in the motor vehicle sector are influenced by the change in tasks - which in turn is determined by numerous parameters - and the work or-

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ganization in the enterprise. The skills required depend on the combination of operations. This development in qualifications is not an automatic process triggered off by the emergence of the high-tech motor vehicle. What is decisive is the organization concept of the repair shop. Team spirit and lean service, together with a reduced horizontal and vertical division of labour (flat hierarchy) and with high and broad skills in the directly productive section (service and sales) require a skilled worker in the repair shop who can prove his competence in many fields.

How can one react to these global challenges described above? One useful response in terms of vocational education and labour market policy, is the development of a forward looking European occupational profile for which we propose the title **motor vehicle mechatronic**. Essentially, his qualifications will consist of the following:[3]

"One useful response in terms of vocational education and labour market policy, is the development of a forward looking European occupational profile for which we propose the title motor vehicle mechatronic."

❑ **General orientation and sector-specific knowledge:** What is the basic purpose of the occupation.

❑ **Contextual knowledge:** How and why structures and patterns are configured the way they are and not otherwise.

❑ **Detailed and functional knowledge:** What are the essential details of the skilled work to be done and how do things function.

❑ **In-depth knowledge of the system:** How can things be explained and developed within the (technical) system.

The goal of this training is to view the motor vehicle as an integral whole, to learn to operate the most modern equipment, to learn to advise the customer and communicate with him, and to participate in the planning of work organization. The structuring of the contents is based on the operational tasks. Through this we can avoid the abstraction of purely technical contents.

A perusal of our studies on the motor vehicle sector in the USA shows that what is currently emerging here in Europe is already well established there. The motor vehicle mechanics are responsible for the whole vehicle. In the repair shops there is no sub-division between motor vehicle mechanics and motor vehicle electronics. The only exception is specialists who are responsible for especially difficult repairs.

Between vocational competence and continuing training

The different continuing training models of the manufacturers

The continuing training offered by the manufacturers is a reflection of the structure of work operations in the motor vehicle repair shops. In addition to this, there are continuing training courses. While the Japanese manufacturers have a strong orientation to the product with the aim of a narrow vocational qualification, the studies on the USA and Europe show that there are three models:

"While the Japanese manufacturers have a strong orientation to the product with the aim of a narrow vocational qualification, the studies on the USA and Europe show that there are three models (...). However, none of the models solves a major problem, namely, a reduction in the need for continuing training."

The specialization model
This model is oriented towards a high degree of specialization and a broad division of tasks, but it ignores the change in the motor vehicle sector.

The multiplier and cascade model
This model is a response to the change in tasks in the repair shops and aims to ensure competitiveness and greater customer satisfaction.

This model comprises the organization of continuing vocational training in such a way that a trainer - who himself has been trained in a customer service school of the manufacturer - passes on his knowledge to colleagues in in-company courses. These courses are supported by correspondence courses and self-learning material (multimedia).

The comprehensive model
The goal of this model is to prepare each employee for the requirements arising from a broad spectrum of tasks at the workplace. The aim is to increase the flexibility of the employees. At the same time, this concept tries to prepare them for all-round activities or for tasks in new forms of work organization such as team work or active involvement of all members of

3) A detailed concept of the motor vehicle mechatronic can be obtained from the author.

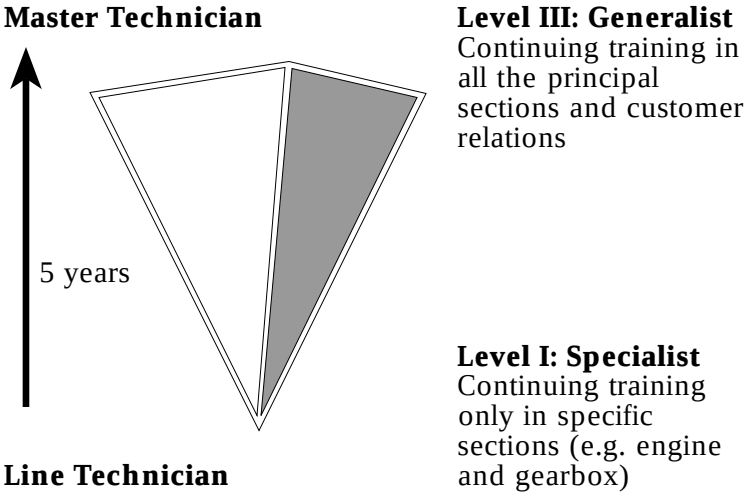
staff in a general workplace culture. Particular variations in this model, e.g. EUROSTEP, NISSAN, have the aim of ensuring European mobility for every employee.

All continuing training measures are based on initial vocational training. This means that manufacturers and other companies have to take many diverse aspects into consideration when designing their continuing training concepts and courses. This also applies to the scope and the volume of the measures. The advocates of the specialist and cascade models orient their concepts exclusively to product innovations and put the emphasis on the quality assurance which the repair shop has to provide. Others follow a longer-term qualification concept and try to improve service performance by ensuring that the mechanics have a high level of competence and long years of attachment to the company. These are generally the advocates of the comprehensive model.

The manufacturers who have decided to adopt this concept, organize their continuing training in such a way that a motor vehicle mechanic with an average initial level of vocational qualification, has acquired comprehensive skills after about 3 years. This concept has nothing to do with the classical European tradition of skill acquisition where the real technical training starts after initial vocational training. It may be described briefly in the following words: from specialist to generalist with broad vocational competence developed under the tough competitive conditions of the US market and practiced by TOYOTA - and also by FORD. The formal sub-division consists of three training stages whereby the third stage - the Master Technician - can be reached after five years of employment in the company and after having completed the whole range of continuing training measures. In graphic terms the reversal of specialization may be depicted as a pyramid **(Figure 1)**. In this model there is a close link between continuing training and career advancement within the company.

In contrast to this there is the concept which is strongly oriented to specialization **(Figure 2)**. This is based on the more narrow tasks of the mechanic and direct

Figure 1:
Reversal of specialization through continuing training



continuing training requirements are only established later.

However, none of the models solves a major problem, namely, a reduction in the need for continuing training. Repair shops and companies continue to face two contradictory poles:

❑ The necessity to improve continuing vocational training.

❑ At the same time, growing pressure to rationalize because of competition.

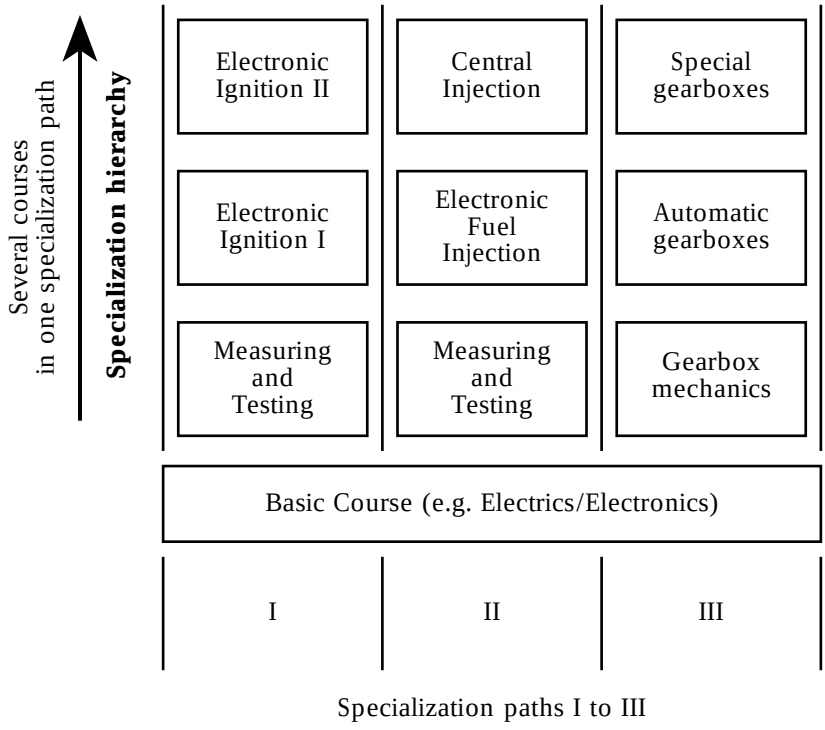
It is doubtful whether such conflicting forces can be reconciled. Up to now the following solutions have been attempted:

❑ Continuing training is decentralized and shifted to an intermediate or repair shop level. In Europe the intermediate level has turned out to be the importers, the sales centres and branch offices. In the USA it is generally the colleges which assume this function.

However, because of economic reasons, repair shops can accept this process only to a limited extent. They are service stations and not continuing training centres.

❑ As a further step towards decentralization, many motor vehicle manufacturers have developed teaching and learning material (programmed learning, computer-based learning, multimedia instruc-

Figure 2:
Continuing Training with the Specialist Concept



"No other economic sector has such progressive continuing training concepts as the motor vehicle sector."

"The path followed to date of conceptualizing and organizing learning and working in the motor vehicle sector as two isolated task categories with no more than superficial links, or as separate activities undertaken by the employees, leads to a dead-end (...)."

tion, interactive learning, electronic experimental sets, etc.) for in-company training and self-study. However, only in exceptional cases is it possible to reduce the costs through rationalization of continuing training or through the multiplier/cascade model.

New modes of learning in the motor vehicle service sector

No other economic sector has such progressive continuing training concepts as the motor vehicle sector. Modern course systems operate with the most modern media and methods. All the material which has been developed by the motor vehicle manufacturers is constantly updated with the sole purpose of giving the employees of repair shops the best possible skills.

Successful learning methods whose costs are not inordinate, are highly varied. The individual enterprises try to achieve successful learning and reasonable investment in human resources.

The path followed to date of conceptualizing and organizing learning and working in the motor vehicle sector as two isolated task categories with no more than superficial links, or as separate activities undertaken by the employees, leads to a dead-end; at least, it is virtually impossible with this method to cope with the computerization of the motor vehicle and with the many diverse ways of integrating motor vehicles in computer-assisted transportation and traffic control systems. This is illustrated by an assessment of the leading media concepts applied in continuing training in the motor vehicle sector (see Figure 3).

Self-teaching materials and computer-based learning (AV-media and CBL[4])

Assessment:

This method is based on a strict separation of working and learning. The emphasis is on the acquisition of "theoretical knowledge".

The AV-media and CBL programmes, developed and used on a large scale, serve the primary purpose of solving the quantitative problem, i.e. to meet the rapidly expanding need for continuing training. They also have the aim of backing the strategy of decentralizing and shifting continuing training to the repair shop and to off-work hours.

Activity-oriented learning

Assessment:

This method is based on a comprehensive approach to continuing vocational training. The basic feature is the awareness that important knowledge can be acquired through concrete object-oriented activity and sensory experiences.

The customer service schools provide this type of continuing training but, because of its cost, it cannot be extended indefinitely.

Reintegration of work and learning through tutorial, computer-based learning

Assessment:

The work process itself is used and taken as a "learning case".

4) AV = Audiovisual Media;
CBL = Computer-Based-Learning.

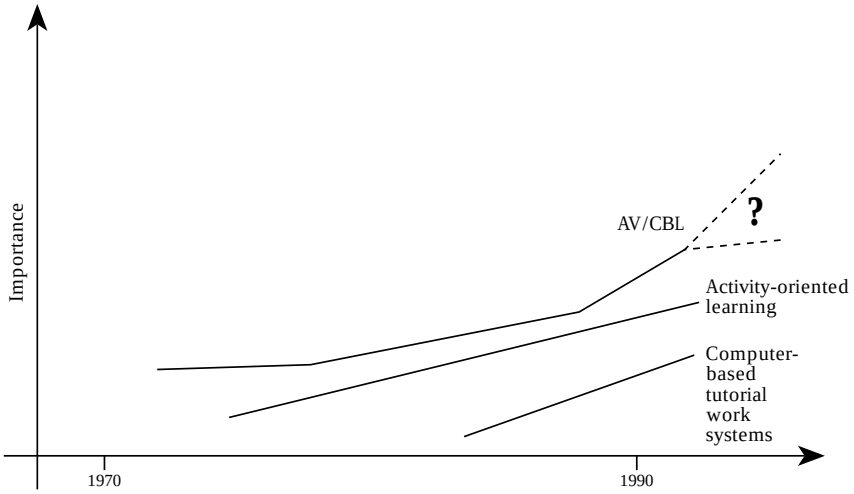
Discussion of how this can be done is still in its early stages[5].

AV-media and CBL programmes will be used in continuing training in future too, but they cannot help to overcome capacity bottlenecks caused by the growing need for continuing training. They also do not meet the demands of the work process today.

That is why many attempts are being made to design and apply computer-based tutorial working-and-learning systems which also integrate information systems. These intelligent maintenance and service systems make it possible to incorporate continuing training as permanent implicit learning in the work process[6]. The development of this new generation of computer-based work systems can be undertaken at two levels. The first alternative may be called the computer-based programmed workshop which makes the mechanic a de-qualified accessory who serves (and is the servant of) an information system. The second is characterized as computer-based qualified skilled work. The developers of this system say that it enables a greater degree of flexibility in work organization and adaptation to the qualification and experience of the mechanic. On the other hand, the testers used at the moment only have rigid diagnostic procedures and that is why they lack technical and organizational flexibility. The developers have not committed themselves to one of the two paths. One project leader said "The mechanic can let the computer guide him completely right up to the final result. ... But there is also the other extreme which we call the expert system, where all I want the machine to tell me is whether my assumption that the problem is located here or there is correct. In this case the mechanic steers the machine and not the system the mechanic."

This alternative of developing computer-aided work systems, embedded in an integrated data management system and equipped with expert system quality, makes it possible to incorporate learning in the work process. The interactive structure of the expert systems and their self-explanatory ability makes it possible to design the work systems as information and learning systems at the same time.

Figure 3:
Media Concepts and their Importance for Continuing Training in the Motor Vehicle Sector



The system can be used as a "tutor" and training programme and therefore does not determine the qualification requirements. A high skill level of the user means that diagnostic technology can be used as a tool. But, a lower level of general and vocational initial training means that the machine steers the user.

The computer-assisted qualified skilled work method requires software-controlled diagnostic systems and "learning" software. The latter may become a market determinant if and when computer-controlled work systems are introduced. In view of the steadily shorter innovation cycles in the motor vehicle sector, the need for continuing training rises so steeply that it can no longer be met by an organizational form which separates learning and work. The structure of learning-oriented work systems and the inclusion of learning in the organization of the work process alone can help to alleviate capacity problems in continuing training.

It is a European responsibility to develop computer-based tutorial work systems with integrated learning contents. Through this, the trend towards "quality servicing stations" could be channelled into an orbit where costs remain reasonable. If this process goes hand in hand with a reduction of "user knowledge" and a standardization of systems and their interfaces, there is a good chance of estab-

That is why many attempts are being made to design and apply computer-based tutorial working-and-learning systems which also integrate information systems. These intelligent maintenance and service systems make it possible to incorporate continuing training as permanent implicit learning in the work process.

In view of the steadily shorter innovation cycles in the motor vehicle sector, the need for continuing training rises so steeply that it can no longer be met by an organizational form which separates learning and work.

5) Concrete approaches for the re-integration of "learning in the work process" have already been developed for the manufacture of motor vehicles. It is still not clear how far these approaches are suitable for the service sector.

It is a European responsibility to develop computer-based tutorial work systems with integrated learning contents. Through this, the trend towards "quality servicing stations" could be channelled into an orbit where costs remain reasonable.

lishing internationally competitive diagnostic centres in the service and repair market which will reduce "pseudo-skills" and considerably raise the mobility of the workforce. The service and repair market would also become a powerful software manufacturer at international level.

Future prospects

The European motor vehicle repair and sales market is undergoing dynamic change. Quality servicing stations are required to cope with competition. This implies numerous requirements such as the introduction of a **universally qualified motor vehicle mechatronic** and permanent continuing training. The motor vehicle mechatronic can develop into a European occupational profile. The reactions of the motor vehicle manufacturers are varied. Provision of continuing training has reached its limits. AV-media, CBL programmes and the decentralization of continuing training (re-location in repair shops and off-work hours) can only absorb some of the increased demand. The development of computer-aided tutorial work systems with "learning" software is still in its infancy but it offers many opportunities of making the European service and repair market internationally competitive.

6) A step in this direction is the diagnostic system introduced by BMW at the beginning of 1994 with the three components:
- DIS (Diagnostic and Information System),
- TIS (Technical Information System), and
- ETK (Electronic Parts Catalogue).

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In Pursuit of Lifelong Employability: priorities for initial formation

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Achieving lifelong employability demands radical change in attitudes towards learning and development and in the systems of education and training. Firstly, collaboration between business and education in the development and delivery of the school curriculum must be specifically aimed at preparing young people for adult and working life. Secondly, initial formation must not only provide an effective foundation for continuing development but positively increase the commitment to independent learning. Finally, every individual must have access to practical means by which to reflect on their achievements and experiences, review their progress and performance and plan their future development, without necessarily being dependent upon others for support.

Introduction

Lifelong employability demands a workforce that is naturally predisposed not only to view learning and development as a normal and continuing feature of everyday life but to recognise ***all*** learning wherever it takes place, as having the potential to add value to the performance of the individual and their contribution as an economically active member of society. Education and training has, all too often, been used to express the divisions in society, rather than as a means by which to unite it in a common purpose. We continue to emphasise the distinctions between, for example, education and training, between academic and vocational, between compulsory, further and higher education, between full-time and part-time learning etc. Each carries its own implicit status difference within a clearly differentiated hierarchy of academic, vocational and work-based learning.

There is now an urgent and compelling need to change these attitudes. The workforce of the future will need to be different from the workforce of the past in several key respects. Individuals will need to be much more flexible, able to respond to rapidly changing circumstances and demands whilst increasing their contribution to the enterprise. Those who wish to protect their long-term employability will need to take greater responsibility for their own learning and personal development. This will not happen by accident. It demands timely and effective intervention by all the major stakeholders; from education, from business and from governments.

Three factors appear to be of particular importance. Firstly, there must be effective collaboration between business and education in the development and delivery of the school curriculum, specifically aimed at preparing young people for adult and working life. Secondly, there must be patterns of initial formation which not only provide an effective foundation for continuing development but positively increase the commitment to independent learning. Finally, all those who are potentially economically active must have access to practical means by which to reflect on their achievements and experiences, review their progress and performance and plan their future development, without necessarily being dependent upon others for support.

Making education our business

If a seamless and continuing process of adult learning is to be created, there is no alternative but to begin in the schools system. There are clear economic, social and political imperatives for education and business to work together to bring about, and help sustain, the necessary changes in attitudes and commitment to learning. Education and business are, in any case, mutually dependent, neither being able to fulfill its essential role in society without the other. Whilst education/business collaboration cannot, of itself, compensate for inequalities of opportunity and circumstance, it can certainly help create the cultural conditions in which individuals are positively encouraged to recognise, and make progress towards fulfilling, their potential.

Many attitudes towards learning and earning are formed relatively early in life and, once formed, are notoriously resistant to

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"Perhaps the most important of Rover Group's education initiatives has been the creation of Partnership Centres at each of the company's major sites."

"(...) although such employer interventions undoubtedly increase students' awareness of the world of work, they remain at the margin of educational experience(...)"

change. Therefore, if the workforce of the future *is* to be genuinely different to the workforce of the past, education and business must work together to help make it so. It will not happen otherwise. It cannot happen otherwise.

Education partnership can no longer be viewed as an optional activity for employers, but a mainstream business necessity, driven by enlightened self-interest. It is also a vital means by which industry and commerce can communicate its vision, values and priorities to the next generation. A company that demonstrates its commitment to education partnership and to lifelong learning not only presents a positive image to its customers, its suppliers, its employees and its shareholders, but is also an enterprise that people are more likely to want to join than to leave.

Since the late-1980's, the Rover Group has championed a new vision for education partnership in the UK, linked to the need for schools to provide the essential foundation for lifelong learning and to the work-related curriculum as a means of empowering young people to take greater responsibility for the realisation of their own potential.

For the Rover Group, education partnership is just as much a part of investing in the future as the billions of pounds spent on state-of-the-art technology and the development of new products. The partnership programme reflects a long-standing commitment to working with schools to enhance and enrich the curriculum and help prepare young people for the opportunities, responsibilities and experiences of the world of work, raising levels of aspiration, expectation and achievement.

Perhaps the most important of Rover Group's education initiatives has been the creation of Partnership Centres at each of the company's major sites. The industrial/business workplace is not always an ideal learning environment in which to support the school curriculum and if schools are to deliver a broad, balanced, relevant, work-related curriculum for all young people, they need a 'curriculum-related workplace', geared specifically to achieving planned educational outcomes.

Rover's Partnership Centre concept seeks to address this need by creating dedicated facilities at the heart of each of the company's major sites, operated in conjunction with the local educational community. Each Partnership Centre reflects the subtle differences that exist from area to area. They have developed in ways that are appropriate to the needs of the local schools and which exploit the opportunities presented by the operational activities of the particular plant. Each provides a range of modules for students aged from 5 to 19, related to the National Curriculum at each Key Stage, with the active involvement of Rover associates as well as teachers and Partnership Centre staff.

The Partnership Centres are powerful symbols of the company's commitment to education, both for the workforce and the local community, and provide a natural meeting point for employees, teachers and students from which all can benefit. Providing an opportunity for the very youngest students to experience learning in the midst of an efficient, high-technology car plant, the Partnership Centres actively encourage students to review, and where necessary revise, their perceptions of the working environment and develop more positive attitudes towards learning beyond school. In complete contrast to the 'bolt-on extra' approach to work-related aspects of the school curriculum, the Partnership Centres encourage young people to take for granted that some of their learning will naturally take place on an employer's premises rather than in the classroom and utilisation has steadily increased, from 13,300 student days of curriculum activity in 1991 to 16,380 in 1994.

With around a thousand pupils a year undertaking placements with Rover Group, work experience continues to play a major part in the on-going Education Partnership Programme. However, once again, the company has adopted a distinctive approach, placing quality ahead of quantity and aiming to ensure that, wherever possible, the experience encourages students to manage their own learning. For example, learning agreements have been introduced, setting out what each pupil will know, understand and be able to do on completion, determined partly by what has been negotiated with the school and partly as a result of discussions with each individual.

However, although such employer interventions undoubtedly increase students' awareness of the world of work, they remain at the margin of educational experience, rather than providing the core around which the preparation for lifelong employability can be built. Invariably, students are left to make whatever sense they can from a disparate and incoherent mix of supposedly work-related curriculum activity, scarcely an effective preparation for working life. Seldom are the outcomes made explicit to those involved; seldom is there any planned progression and formal assessment of work-related learning, in a form which has relevance beyond compulsory education, is rare.

By contrast, instead of focusing on bringing relevance to the existing subject curriculum in schools, the Working Life Framework now being piloted in the UK concentrates on developing the specific personal skills and knowledge necessary as a preparation for working life (London Enterprise Agency, 1994). Each of the four inter-related components of the Framework are expressed in learning outcome terms, which can be measured at each Key Stage of the National Curriculum from 5-16 (Figure 1). This is an approach which has the potential to make a real difference in the crucial formative experience of the students involved and provide a better basis for lifelong employability.

However, if such effective partnerships between education and employment are the first vital prerequisite for creating a lifelong learning culture in which individual contribution and personal development are positively encouraged, the second is a coherent and integrated framework for initial formation and continuing education and training that allows work-based learning to be recognised, valued and have parity of esteem alongside academic and other achievements.

Figure 1
Pathways Toward Working Life
A Framework for Teaching and Learning

1 Knowledge and understanding of the developing self and personal skills

1.1 learners know their strengths and current limitations
1.2 learners understand the importance of respecting themselves and others
1.3 learners identify personal learning needs, seek resources and plan learning opportunities
1.4 learners can plan and set their own criteria for assessing personal effectiveness and development
1.5 learners approach tasks independently and effectively
1.6 learners understand the importance of health and safety
1.7 learners have the knowledge, understanding and skills to handle personal finances

2 Knowledge and understanding of opportunities, choices, responsibilities and rights

2.1 learners can form appropriate relationships in different contexts
2.2 learners know how to work collaboratively and appropriately with others
2.3 learners are aware of external parameters which affect their role as citizens
2.4 learners can seek out information and accept help from a variety of careers education and careers guidance agencies
2.5 learners know the range of career and job opportunities available to them
2.6 learners can record information about choices and opportunities and can provide feedback to others about opportunities
2.7 learners can identify learning needs related to the world of work

3 Knowledge and understanding of work and knowledge and understanding of business

3.1 learners know and understand how businesses create wealth
3.2 learners know how services are provided in different sectors of society
3.3 learners know about the scope and range of work and business
3.4 learners know about the legal responsibilities of employers and employees
3.5 learners know about political systems and processes and have a positive attitude towards exercising their responsibilities and rights within the world of work
3.6 learners understand that they live in a pluralistic society
3.7 learners can record and review what they have learned about the world of work

4 Knowledge and understanding of the influences of the economy and the environment on life

4.1 learners know about and can investigate the interrelationship between the economy and the environment
4.2 learners can analyse and interpret information about the economy and the environment

Developing an integrated approach

Within the UK engineering sector, it has become clear that a bold restructuring of engineering education and training is essential to meet the challenges of the 21st Century. Analyses suggest that the trend towards flatter organisation structures will continue, with a consequent effect on the nature of individual work roles and opportunities for progression (Engineering Council, 1995).

Hierarchical levels in employment have already undergone tremendous change and

"Rover Group's Integrated Engineering Development Scheme (IEDS) builds on its model of an integrated post-14 system for engineering formation (...)"

will continue to blur as team working, single status policies and flatter structures become the norm. Outmoded and rigid adherence to a divisive 'class system' of craft, technician and professional in engineering will become increasingly inappropriate. In any event, 'real' jobs are infinitely more variable than any single qualification or professional classification suggests. Competence must be viewed as a whole. If fault lines are created, or allowed to develop, between school, further education, higher education and continuing personal/professional development, neither seamless continuity nor more autonomous learning will be achieved.

Perhaps for the first time, Britain has a real prospect of creating a seamless, integrated model of education and training, beginning with work-related curriculum activities for the very youngest pupils long before the many preconceptions and prejudices about work and careers have a chance to take root, continuing through vocational qualifications in which the individual can accumulate unit credits at a pace and in combinations that suit their particular needs, progressing through higher education programmes designed to achieve predetermined performance outcomes and on into continuing professional and personal development to support lifelong learning.

However, to achieve that vision, employers and educators will need to work in active partnerships as never before. New relationships will need to be forged, not only based on genuine parity of esteem for so-called 'academic' and 'vocational' achievement but on a new willingness amongst educators to recognise the workplace as a legitimate learning environment.

Work-based programmes combining vocational training, vocational education and skills development have existed for many years. However, such programmes frequently lacked effective integration and seldom provided adequate opportunities for continuity and progression. Now, Rover Group has led the development of a new initiative aimed at revitalising such work-based schemes in engineering manufacture.

Within the UK economy, patterns of initial vocational education and training vary enormously. In some sectors, well established post-16 routes do exist but, in many fields, there is no integrated framework providing for career progression for young people. Critical education and qualification decisions made at 14, 16 and 18 frequently determine, sometimes permanently, the course of an individual's subsequent career, limiting their flexibility of movement and restricting their access to alternative opportunities for learning and/or employment.

So the UK Government's announcement, in the November 1993 Budget statement, of its intention to promote so-called 'Modern Apprenticeships' provided a timely opportunity to review how young people in a wide range of occupational sectors could be given the best possible preparation for future lifelong employability.

As one of the 'modern apprenticeship' prototype schemes which started in September 1994 across the UK Engineering Manufacture sector, Rover Group's Integrated Engineering Development Scheme (IEDS) builds on its model of an integrated post-14 system for engineering formation (See Figure 2) and is distinctive in a number of ways.

❑ Firstly, it aims to eliminate the traditional differentiation between categories of trainee; engineering apprentice, technician and student. Pathways for individuals are constructed from combinations of units from National Vocational Qualifications* (NVQs), General National Vocational Qualifications* (GNVQs) and degree programmes leading, where appropriate, to 'whole' qualifications but recognising both the integrity of individual units and their inter-dependency in combining to produce a coherent preparation for employment. Instead of arbitrarily setting a ceiling on an individual's potential progression at the point of entry, the scheme is designed to offer a clear and explicit route to higher qualifications, from the very start, to all those with the necessary aptitude and motivation.

❑ Secondly, by combining, wherever possible, the accumulation of evidence towards NVQ achievement at Levels 2, 3 and 4 (see Figure 3) with the new Intermediate and Advanced GNVQs and the degree programme, Rover is seeking to

* Editor's note:

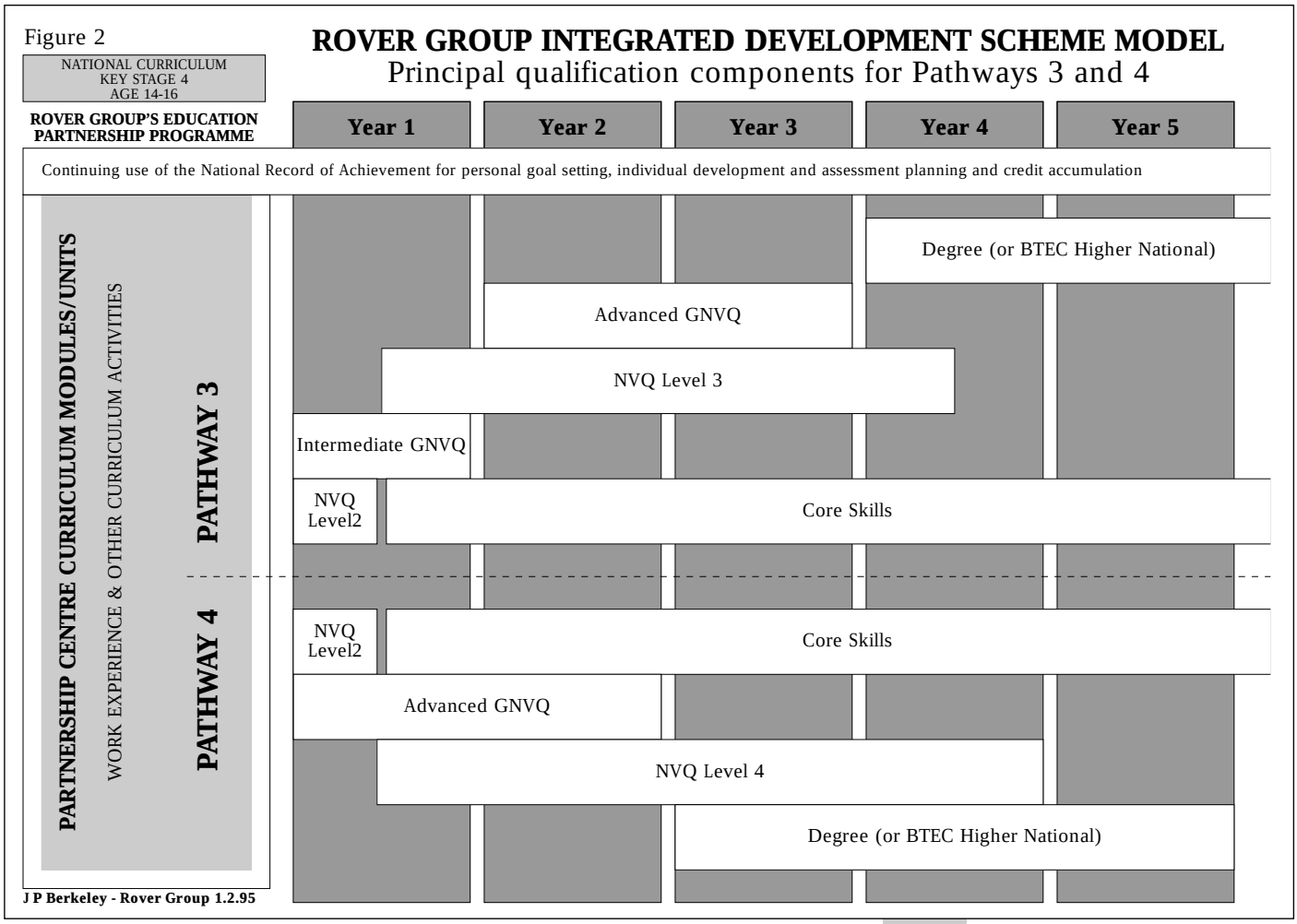
National Vocational Qualifications (NVQs) set the seal on standards of performance established for specific occupations. Being work-based, NVQs, which are available at five levels within a comprehensive national framework, are designed to provide open access to assessment and facilitate life-long learning for people in employment.

General National Vocational Qualifications (GNVQs) provide certification of a broad base of vocationally relevant knowledge and skills acquired in preparation either for entry to the labour market or for progression into higher education. GNVQs are primarily intended for delivery via programmes of initial vocational education in school or college.

The new framework of vocational qualifications provided by NCVQ (the **National Council for Vocational Qualifications**, established in 1986 to reform the system of vocational qualifications in England, Wales and Northern Ireland), ensures that, through NVQs and GNVQs, everyone at or moving towards work can be assessed and certificated against agreed national standards.

Source: Vocational Qualifications in England, Wales and Northern Ireland, NCVQ, London, 1994

Figure 2



bring together the mastery of relevant knowledge and understanding with the practical development of occupational competence. By integrating vocational training, vocational education *and* work-based skills development, the scheme provides an infinitely better foundation for lifelong learning and employability than the incoherence of the present post-16 system in England and Wales. Indeed, with GNVQs now being introduced from age 14, the process of seamless continuity can be supported through the Education Partnership Programme with young people accumulating credit from Partnership Centre activities and work experience.

❑ Thirdly, the scheme aims to tackle the present relatively compartmentalised approach to learning delivery, recognising that not only will some vocational education components of the programme be best developed in the workplace but that the college or the university is also a workplace, with significant opportunities for experiential learning and the development of competence.

❑ Finally, student-centred learning is promoted from the first few weeks of induction, with a period of residential experience at an outdoor pursuit centre being used to introduce students to collaborative learning and the use of portfolios to accumulate core skills performance evidence for subsequent assessment (see Figure 4).

Prior to the advent of the 'modern apprenticeship' initiative, Rover Group had already embarked upon a major programme to develop and introduce a predominantly work-based, outcomes-referenced, post-16 route to engineering at degree level. In order to achieve this, a standards framework derived by functional analysis had been developed, expressed in the familiar format of units and elements of competence, performance criteria, range statements and assessment specifications, defining the full range of

Figure 3
The Vocational Qualification Framework

Level 1 Competence which involves the application of knowledge in the performance of a range of varied work activities, most of which may be routine or predictable

Level 2 Competence which involves the application of knowledge in a significant range of varied work activities, performed in a variety of contexts. Some of the activities are complex or non-routine and there is some individual responsibility and autonomy. Collaboration with others, perhaps through membership of a work group or team, may often be a requirement.

Level 3 Competence which involves the application of knowledge in a broad range of varied work activities performed in a wide variety of contexts, most of which are complex and non-routine. There is considerable responsibility and autonomy and control or guidance of others is often required.

Level 4 Competence which involves the application of knowledge in a broad range of complex technical or professional work activities performed in a wide variety of contexts and with a substantial degree of personal responsibility and autonomy. Responsibility for the work of others and the allocation of resources is often present.

Level 5 Competence which involves the application of a significant range of fundamental principles across a wide and often unpredictable variety of contexts. Very substantial personal autonomy and often significant responsibility for the work of others and for the allocation of substantial resources feature strongly, as do personal accountabilities for analysis and diagnosis, design, planning, execution and evaluation.

"(...) the public examinations system was not able to reflect (...) achievements and experiences (of school leavers) , leaving many young people undervalued and potentially disadvantaged."

"(...) it was not until 1990 that the Employment Department initiated discussions which led, in February 1991, to the launch of the National Record of Achievement (NRA)."

potential outcomes on completion of the degree and this now constitutes the 'higher education phase' of Rover's IEDS programme.

Records of achievement

Finally, the third prerequisite for promoting autonomous learning within a culture of lifelong development is an effective mechanism for reviewing progress, recording achievement and individual development planning.

The origins of records of achievement in UK schools can be traced directly to a system of public examinations designed to meet the needs of only a minority of the school population. However, during the 1960's and 1970's, there was growing concern at the numbers of young people who were leaving school with little or nothing to show for ten or eleven years of compulsory education. Despite the fact that a considerable amount of learning had obviously taken place and many of those school leavers had achieved a great deal that might be relevant to them in adult and working life, the public examinations system was not able to reflect those achievements and experiences, leaving many young people undervalued and potentially disadvantaged.

One result was the emergence of a number of independent initiatives designed to provide records of achievement "to recognise, acknowledge and give credit for what pupils have achieved and experienced, not just in terms of results of public examinations but in other ways as well." (Department of Education and Science, 1984)

However, it was not until 1990 that the Employment Department initiated discussions which led, in February 1991, to the launch of the National Record of Achievement (NRA). This introduced a process which has the potential to make the single greatest contribution to promoting positive attitudes towards personal development and empowering individuals to take ownership of the learning experience, but can only succeed in doing so under certain circumstances.

Britain desperately needs a new generation of independent learners, motivated and prepared to take charge of their own development, not expecting others to do it for them. Experience in Rover Group, where over half the adult workforce has already taken the opportunity of having a record of achievement and individual development plan, suggests that such initiatives need to be led by example.

There is still considerable confusion in the school system as to the proper focus for records of achievement. However, it should at least be clear that if the NRA is to realise its potential as the key to helping others to realise theirs, it must not be allowed to become confused with statutory reporting of National Curriculum outcomes to parents. Quite simply, it's not for them; it's for the individual. Rather than appearing to be used like an old-style school report with norm-referenced comparisons, it must be seen to bring

added value to the student as the product of a shared process, owned and used by the learner to pursue their personal commitment to lifelong learning.

Beyond school, it cannot simply be assumed that individuals will become members of supportive, learning-orientated organisations which will facilitate and encourage their continuing personal development and lifelong learning. On the contrary, the only safe assumption would be that, for the foreseeable future, only a relatively small minority will be fortunate enough to find themselves in such an environment.

The emphasis, therefore, must be on independence rather than dependence; creating models of recording achievement and individual development planning which are free-standing and do not rely for their effectiveness upon access to external support, whilst clearly benefiting where such support is available.

The first essential for any personal development portfolio is that it should be seen to be concerned with the future rather than the past. If the majority of young adults perceive their record as little more than a glorified curriculum vitae, they will assume that it is intended to serve the same purpose. For the concept of a record of achievement for adults to have any prospect of success, it must be recognised as being principally for the individual and primarily as the basis upon which to identify future personal goals and individual development plans.

As work continues on the proposed 'European Portfolio', the aim must be to encourage individuals to value their record and development plan for its personal benefit to them, before promoting it as of value in their potential employment or learning and development relationships with others. The only constant is the individual, equipped with the means to take ownership of his or her learning and development, irrespective of whether their immediate environment is positively supportive, openly hostile or simply passive in its approach towards the achievement of their goals. Whether developing that autonomy whilst at school or having been encouraged to 'return to learning' as an adult, the key requirement is for simple, practical and accessible support material for use by the individual. This could and should be incorporated within the portfolio itself, since without it the document is of little or no use.

So far, it has been argued that encouraging and supporting independent use of

Figure 4
Core Skills Units (Example of Level 3 Elements)

Communication

3.1 Take part in discussions with a range of people on a range of matters
3.2 Prepare written material on a range of matters
3.3 Use images to illustrate points made in writing and in discussions with a range of people on a range of matters
3.4 Read and respond to written material and images on a range of matters

Information Technology

3.1 Set system options, set up storage systems and input information
3.2 Edit, organise and integrate complex information from different sources
3.3 Select and use formats for presenting complex information
3.4 Evaluate features and facilities of applications already available in the setting
3.5 Deal with errors and faults at Level 3

Application of Number

3.1 Gather and process data at Level 3
3.2 Represent and tackle problems at Level 3
3.3 Interpret and present mathematical data at Level 3

Working with Others

3.1 Work to given collective goals and contribute to the process of allocating individuals' responsibilities
3.2 Agree working methods and use them, and provide information to others on own progress

Improving Own Learning and Performance

3.1 Identify strengths and weaknesses and contribute to the process of identifying shot-term targets
3.2 Seek and make use of feedback, follow given activities to learn and to improve performance

Problem solving

3.1 Select procedure to clarify problems with a range of potential solutions
3.2 Identify alternative solutions and select solutions to problems

"For the concept of a record of achievement for adults to have any prospect of success, it must be recognised as being principally for the individual and primarily as the basis upon which to identify future personal goals and individual development plans."

"As work continues on the proposed 'European Portfolio', the aim must be to encourage individuals to value their record and development plan for its personal benefit to them(...)"

"The evolution of records of achievement and individual development plans has reached a critical stage(...)"

"(...)employees will only see the workplace as a chosen environment for lifelong learning if it offers them the same, or even better, opportunities to develop their potential than formal institutionalised educational provision."

recording achievement and individual development planning should be regarded as the first priority. However, the use of these processes in situations where others are likely to become directly involved with the learner's reviewing, recording and planning must not be overlooked and it is apparent that a wide range of potential 'learning partners' may need their own forms of support. Post-16, this includes managers and supervisors in the workplace, training staff, further and higher education tutors, etc., each with their own distinctive contribution to make to the success of the learner's efforts. Learning partners need support material too if they are to fulfill the learner's needs and, increasingly, the competencies associated with supporting other's learning should be formally recognised and assessed. Since learning partners can themselves be learners too, the processes of sharing reviewing, recording and planning contribute to the partner's own development, effectively closing the loop.

The evolution of records of achievement and individual development plans has reached a critical stage, a watershed from which the initiative will either build into something of real value with significant implications for attitudes towards learning and personal development or decline into a relatively marginal development of little lasting worth.

As President Clinton has observed, "We are living in a world where what you earn is a function of what you can learn; where the average 18 year old will change jobs seven times in a lifetime; where there can no longer be a division between what is practical and what is academic." Europe will only realise it's full economic and social potential if it can truly mobilise the capabilities of the whole of the potential workforce and employees will only see the workplace as a chosen environment for lifelong learning if it offers them the same, or even better, opportunities to develop their potential than formal institutionalised educational provision.

In the employment market, as in education, new models of partnership are essential. "Employers train to meet business needs. Governments intervene in the case of market failure. Both, however, seek to encourage individuals to take responsibility for themselves. Employers cannot achieve their own training and development goals through a passive workforce." (Confederation of British Industry, 1994) Employers and the wider economy are the principal beneficiaries of a flexible, competent workforce but individuals have the greater vested interest in formal recognition for that competence, which they can use to prove their skills to others. This balance of benefit will need to be reflected in future models of funding for learning and development. Where appropriate, tax incentives may usefully encourage both employers and individuals to see learning as an investment as well as overcoming one of the important obstacles to continuing vocational education and training. However, to achieve the optimum benefit, such incentives would have to recognise the smaller, incremental units of learning necessary for genuine flexibility, rather than merely encouraging 'whole' qualifications.

The President of Toyota, Dr Soichiro Toyoda, has presented a challenging vision of the future with his statement that "the purpose of national economic policy is to enable each citizen to manifest his potential fully in work to which he is well suited". There is little doubt that this should indeed be a central aim of economic policy; little doubt too that we have some way to go before such a vision is likely to be realised.

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Education and Starting Work in Japan

Impressions from a comparison between Japan and Germany

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Both Japan and Germany attach major importance to socialization for the world of work. While efforts in Japan centre on the enterprise, in Germany they focus on the occupation. Japanese enterprises regard new employees as "raw material", even though most new entrants to the workforce can look back on a vocationally orientated period of education. Recruitment criteria and the objectives of initial in-plant training depend less than expected on whether the job involves technical or commercial and administrative duties, and on existing educational qualifications. Employers expect the greatest advance in competences between the end of the induction period and the first major promotion. Differences between vocational training in Japan and Germany seem to have been moderated somewhat of late.

Introduction

Japan, like Germany, is among a minority of industrialized nations where the youth unemployment rate is not much higher than joblessness among the working population generally. Since both countries are widely considered to be relatively successful on the economic front, there is great interest internationally in obtaining more detailed information about the latter stages of initial training and the first stages of working life in the two countries.

The favourite reason given for the relatively low youth unemployment rate in Germany is the priority attached to vocational education and training. More than half of all young people undergo vocational training under the dual system. They are employed as trainees in enterprises and spend most of their time practicing with guidance or performing their first occupational duties proper, and attend a vocational school to supplement this on-the-job training. They obtain publicly recognized qualifications, and most of them are engaged on a regular basis by the enterprise where they were trained. Germany is considered the classical example of a country where the focus is on pride in one's occupation and specialized training for a specific occupation is seen as the best possible preparation for working life. This is a fact, even though more than a quarter of the young people trained in this way take up employment in a completely different field and most of them move on within a few years from the enterprise where they received their vocational training.

At first sight, Japan seems to be exactly the opposite. Most schoolchildren know the name of the enterprise where their father – and perhaps their mother – works, but not their occupation. And young people's employment preferences tend to focus more on a particular enterprise than any specific type of work. The choice of subjects at school and college seems to have less of an impact on subsequent occupational activities than in other countries. Initial in-plant training is less formal and does not as a rule lead toany certificate or title.

The question which arises irresistibly from a comparative viewpoint, however, is whether industrial societies really do differ so widely in terms of what competences they consider desirable or necessary for an occupation, or whether the real distinction is that similar competences are trained in different institutions, at different stages in the learning and working process, and designated by different names and certificates. It cannot be ruled out that the crucial difference between Japan and Germany, two extreme examples, is not to be found in training requirements and the knowledge and skills associated with them, but rather in the fact that training and working life in Japan centre on the enterprise and in Germany on the occupation. It should be stressed from the outset that the present article does not provide a definitive answer to this question. But it does go some way towards answering it by supplying information on education, job seeking and recruitment, the process of starting work and obtaining initial training in Japan. These details are then compared with the situation in Germany (cf. especially Demes/Georg 1994).

School education in Japan

In 1993, a mere three per cent of Japanese new entrants to the labour force had completed no more than compulsory edu-

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cation (six years' elementary and three years' intermediate school). Almost half had additionally completed three years of upper-secondary school education. That year the number of new entrants with post-secondary education for the first time exceeded the number of upper high school-leavers (see Table 1).

While it is well known that the choice of certain subjects at school or university has only a limited impact on future occupational duties, it is also true that the value of education — in terms of the selectivity and reputation of the educational institution attended — one manages to attain is very important to the subsequent position on the occupational ladder and to socioeconomic status generally. In this connection, it is easy to forget that many Japanese young people, like their German counterparts, undergo vocational education and training before they embark on working life.

❑ In 1993, 55 per cent of the new entrants to the workforce with twelve years' schooling had completed a vocationally orientated course at upper-secondary school.

❑ Attempts to establish technically orientated higher education courses of shorter duration than university degrees have not been very successful. Less than one per cent of young people in any year attend specialized institutes of higher education (koto senman gakko), which integrate, both on a curricular and an organizational level, the three-year upper-secondary school stage and two-year higher education

❑ Unlike a four-year university degree in some subjects, notably the natural sciences, two-year higher education at a short-course college (tanki daigaku) is not generally considered to constitute specialist preparation for an occupation.

❑ Some 10 per cent of young people in any year attend higher technical schools (senshu gakko) or different types of schools (kakushu gakko) which seek to provide specialized education and training in part and full-time courses lasting between one and three years. The educational and occupational statistics available do not tell us what school qualifications these young people obtain, nor do they reveal how many students attend these institutions while receiving higher education at the same time.

Most Japanese then have completed a programme of vocationally orientated education or specialized higher education before they enter occupational life. At the same time, this rarely includes work experience, and the courses are not generally viewed as initial or specialized training as such.

In Germany, by contrast, it is normal for over 80 per cent of new entrants to the workforce in any given year to have completed specialized higher education (almost 20per cent) or vocational training (over 60 per cent). More than half the young people in any year undergo a publicly recognized training programme under the dual system, i.e. they are usually employed as trainees for a number of years by an enterprise, while attending a vocational school or a comparable institution at the same time. For example, anyone who leaves secondary school with university entrance qualifications but does not go on to complete a course of higher education or some form of vocational training will appear as "untrained" in the statistics alongside those who fail to complete nine years' schooling.

Table 1

Breakdown of new entrants to the workforce by educational qualifications (as a percentage*)

Year	Type of qualification				
	Intermediate School	Upper Secondary School	Short-course college	University (4 years)	Total
1960	50	42	1	7	100
1970	20	60	6	14	100
1980	6	56	12	26	100
1990	4	54	14	28	100
1993	3	48	18	31	100

Source: Statistics supplied by Japanese Ministry of Education, Science and Culture

* Refers only to persons with one of the four most common qualifications (excludes graduates of specialized institutes of higher education and persons with postgraduate university degrees) who start work immediately after completing their education.

Job seeking and recruitment

Job seeking and employers' recruitment procedures in Japan differ widely, depending on the type of qualifications of the candidates. To simplify matters, a distinction may be made between **four areas of recruitment, or four types of procedure** (Teicher/Teichler 1994).

(a) **A closed procedure** is operated for upper-secondary school-leavers entering employment (see Kariya 1994). Once the employment authorities have given their approval, enterprises notify the schools of their vacancies more than six months before the end of the school year. The schools then inform their pupils what is available and eventually recommend each pupil for just one job. The employers invite the recommended pupils to visit them, but almost always follow the school's recommendation when deciding who to engage. Second recommendations and visits to enterprises follow only in a minority of cases where something has gone wrong the first time round.

(b) A **semi-open procedure** is the usual choice for more senior technical positions and positions below this on the career ladder in private-sector commercial and administrative fields. Employers advertise their vacancies in directories and circulars sent to students, and by notifying universities and other institutions of higher education. Enterprises invariably receive recommendations from these institutions in the first instance. Unlike the closed procedure, employers ask most universities for a larger number ofrecommendations than they have vacancies, about twice as many on average. At the second stage, employers then make their selection from a short list of applicants.

(c) **An open procedure** became established in the mid-seventies for senior commercial and administrative positions in the private sector. This principally involves university graduates. Students find out about vacancies mainly through recruitment directories which they receive free of charge more than a year before graduation. They contact a number of prospective employers by sending off the enclosed reply cards. In many cases, younger employees from the enterprises in question (recruiters) will talk to applicants from their own former university and recommend to the personnel department those whom they consider most suitable. The personnel department makes a final decision following interviews and a check on the applicants' documents. As with the other procedures, job offers are made about six months before the students graduate.

(d) **Applicants for civil service posts** must first undergo special tests. Success in these tests does not mean automatic employment, but it is the most important selection criterion. Schools and universities provide support in the form of guidance, but they are hardly involved in the actual recruitment procedure.

In Japan, the transition from education to the world of work involves rather a lot of effort on all sides in terms of information, guidance and contacts. For employers, it is the potential of their workforce which is most important. We shall return to this question in due course. When employers conduct interviews and written examinations themselves, they are concerned with testing general rather than specialist knowledge.

Schools and higher education establishments in Germany, by contrast, are hardly involved in the recruitment process at all. Vacancies are usually advertised in the press or through the labour office. For young people who do not go on to higher education, the most important career decision comes when they leave school and begin vocational training, although many of them move on to other occupations after completing their training, whether through choice or necessity.

The relationship between educational qualifications and careers

Japanese enterprises point out that their criteria and procedures for recruiting new employees depend mainly on the career entry level. While the search for suitable candidates at any level concentrates on those with an appropriate level of education, admission to a specific career entry

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"In Germany, by contrast, it is normal for over 80 per cent of new entrants to the workforce in any given year to have completed specialized higher education (almost 20 per cent) or vocational training (over 60 per cent)."

"Job seeking and employers' recruitment procedures in Japan differ widely, depending on the type of qualifications of the candidates...", but all of the rest on close cooperation between schools and enterprises.

"Schools and higher education establishments in Germany, by contrast, are hardly involved in the recruitment process at all."

In Japan, "(...) admission to a specific career entry level does not automatically presuppose certain educational qualifications."

level does not automatically presuppose certain educational qualifications. Besides, employees may change from one career ladder to another in the course of their working life. The entry levels are given different designations, and in some enterprises a distinction is made between technical occupations, on the one hand, and commercial and administrative occupations, on the other. It is usually possible to speak of **three career levels**:

(1) Admission to the **comprehensive career** level, often called sogo shiku, is conditional on a university degree. In Japanese enterprises, these beginners' posts are occupied by men.

(2) A **general career**, generally called ippan shoku, is intended mainly for women in commercial and administrative occupations. Successful applicants for this career level are usually required to have completed a short course of higher education, i.e. to have attended school and college for a total of 14 years. At the same time, many women with a university degree are advised to apply at this level. Some enterprises offer similar careers in technical occupations.

"In some Japanese enterprises, salary scales and career levels form an integral system. (...) In Germany, many enterprises have four or even more career levels. (...)"

(3) Most enterprises now require candidates for **manual production work**, straightforward sales duties, etc., to hold an upper secondary school-leaving certificate.

In some Japanese enterprises, salary scales and career levels form an integral system. New employees with a university degree may find themselves on a par with upper secondary school-leavers in their fifth or sixth year of employment. In practice, however, there tend to be typical career paths depending on educational qualifications, with a limited degree of interchangeability which differs from case to case.

"In Japan, (...) mobility (...) among younger members of the labour force (...) is not much lower than mobility among young employees in Germany (...)."

In Germany, many enterprises have four or even more career levels. The level immediately above that of a skilled worker is traditionally occupied not by new entrants to the workforce with a certain level of education, but by employees who have obtained the relevant intermediate-level qualifications through in-service training. In Germany, it is stressed more than in Japan that "practitioners", i.e. employees without higher education qualifications, have good prospects of promotion. Whether the differences here are so great as is claimed cannot be definitively established on the strength of the available information.

It has often been stressed in Japan over recent years that mobility is on the increase among younger members of the labour force. Around 1980, some 40 per cent of upper secondary school-leavers were changing their employer during the first three years. This figure had risen to some 50 per cent by the early nineties (Ernst et al 1993, p. 276). It is not much lower than mobility among young employees in Germany (Schöngen and Westhoff 1992).

Development of competences among new entrants to the labour force

In the summer of 1993, 80 big Japanese companies affiliated to Nikkeiren, the Japanese employers' federation, took part in a written survey in which they provided details of the competences they expected from their employees

- ❏ at the time of their engagement (i.e. recruitment criteria),
- ❏ after the initial stage of learning in plant, and
- ❏ at the time of the first major promotion.

The responses are summarized in Figs. 1 and 2. The survey was carried out by a project group established to look at relations between the education and employment systems in Japan and compare them with the situation in other countries. The project is supported by the Volkswagen Foundation, with the present author as coordinator (seeDemes/Georg 1994).

(a) When recruiting new employees among university graduates, big Japanese companies, according to the information they provided, set the greatest store by

- ❏ diligence and commitment
- ❏ communication skills
- ❏ ability to work in a team, and
- ❏ learning ability.

General cognitive abilities, social skills and hard work are almost as important for an employer recruiting technical staff as they are when he is looking for commercial and administrative personnel. A basic and specialized knowledge of the field and an understanding of mathematics often figure as additional expectations in the former case.

(b) The picture is much the same for intermediate-level careers and manual occupations. Desirable competences rank in much the same order of priority, except that the expectations are rather more moderate.

These findings indicate that, particularly in the case of new entrants to the workforce, efforts focus on finding the right "raw material". Certain shifts of priority have been discovered at the initial training stage.

(c) In the first few months of employment, university graduates are expected to show a marked improvement in their basic knowledge of their specialization and their problem-solving skills. They are expected to show a similar degree of progress regardless of whether they are employed in technical, commercial or administrative occupations. Employers also lay stress on specialized knowledge and expect university graduates to display growing affective commitment and motivation (e.g. readiness to take risks, loyalty, ability to work under pressure, and negotiating skills).

(d) Similar changes are expected of employees starting work in positions normally occupied by persons who have completed short-course higher education or upper secondary school.

Greater improvements in competence are expected in the period between the end of the introductory stage and the first major promotion.

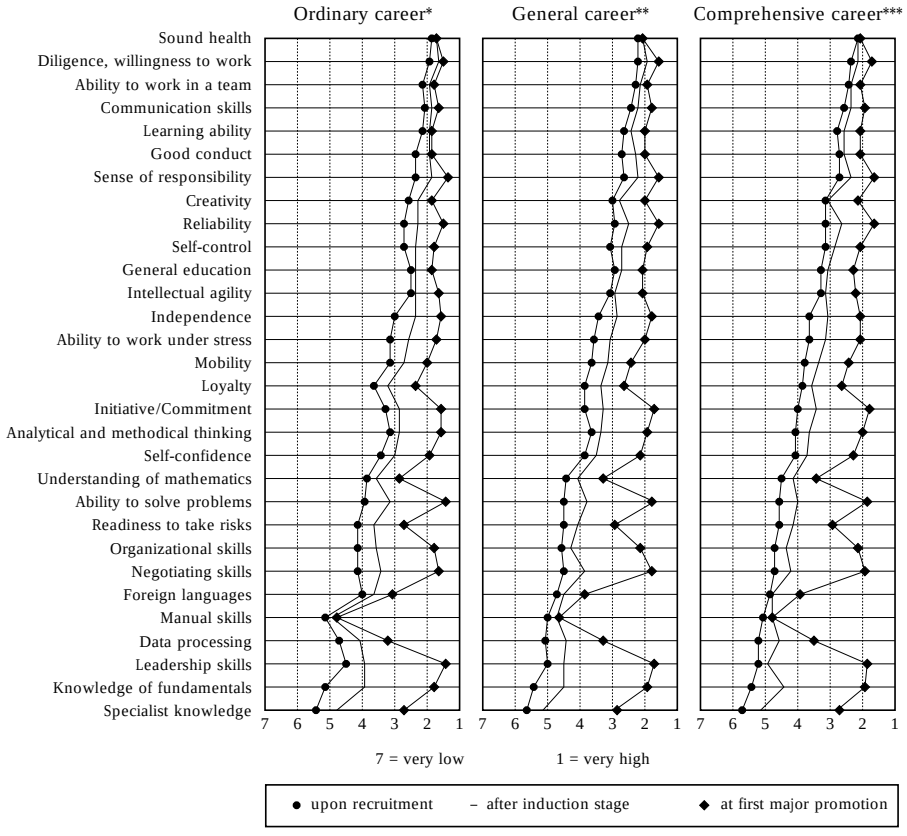
(e) Up to the first major promotion, the focus is on the development of leadership skills. This is expected to almost the same extent for all types of career. It is also true that in this period employees are expected to make far more progress in all other aspects of specialist competence, social skills and personality development than they are during the introductory stage.

(f) Employees in commercial and administrative occupations are likewise expected to acquire a sound knowledge of the fundamentals of their field by the time of their first major promotion. Technical staff have to satisfy more stringent expectations in two respects, namely to acquire more specialized expertise and a better understanding of mathematics.

That more substantial improvements in competences are expected at the last-mentioned stage is because it usually takes longer than initial in-plant training. However, responses corroborate the view that in-plant training is not concentrated on the introductory stage but that it is an almost evenly spread process. This is also supported by the fact that, when we asked at interviews about the duration of the

Fig. 1

Competences expected of employees in commercial and administrative departments of Japanese enterprises (arithmetic mean)



* Mainly upper secondary and intermediate school-leavers
** Mainly persons with short-course higher education and graduates of specialized institutes of higher education
*** Mainly university graduates

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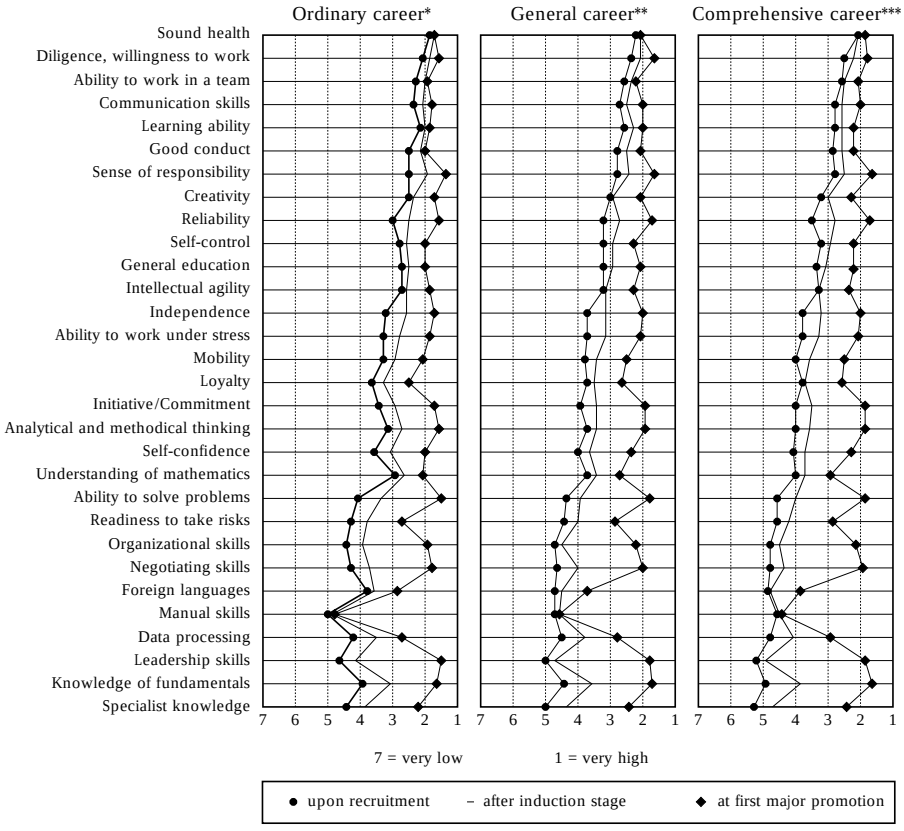
Fig. 2

Competences expected of employees in technical departments of Japanese enterprises (arithmetic mean)



* Mainly upper secondary and intermediate school-leavers
** Mainly persons with short-course higher education and graduates of specialized institutes of higher education
*** Mainly university graduates

"There is no study on Germany which draws distinctions between the competences expected after the various learning and working stages (...). It is, however, clear that employers expect a high degree of specialized competences at a much earlier stage."

" (...) except for a few fields, (...) there is no public coordination or certification of vocational training" in Japan.

induction phase, i.e. the period which elapses until new employees are able to work more or less normally, the question elicited surprise and requests for clarification or else, in most cases, very non-committal estimations.

There is no study on Germany which draws distinctions between the competences expected after the various learning and working stages in a similar manner to that cited on Japan. It is, however, clear that employers expect a high degree of specialized competences at a much earlier stage.

Initial in-plant training

The in-plant induction and initial training stage in Japan (cf. survey in Muta 1994) varies considerably according to the economic sector, the size of the enterprise, the department and educational qualifications. These variations are particularly large due to the fact that, except for a few fields, there is no public coordination or certification of vocational training. Some enterprises have their own full-time schools which run training programmes over a number of years and are recognized by the Ministry of Labour. Others offer full skilled worker training programmes, similar to the usual practice in Germany, normally lasting two to three years. The in-plant initial vocational training stage in Japan is usually much shorter. Of almost 300 Japanese companies asked at the beginning of the nineties about the length of their initial training schemes:

- 29 per cent indicated an average duration up to three months,
- 16 per cent up to six months,
- 42 per cent up to one year, and
- 12 per cent an average initial training period in excess of one year.

Another study carried out in the late eighties reveals the duration of the typical phases of initial training:

- One in four enterprises invite future employees for a familiarization programme before they start work. This might last anything up to one month (average duration among all enterprises surveyed 2.3 days).
- Induction training, usually off-the-job training immediately following the start of employment, lasts an average of 25.3 days. Two to three-week seminars are the most common form, often at the enterprises' own training centres.
- The survey revealed an average duration of 100.2 days for initial on-the-job training.
- Less than a third of enterprises provide follow-up training programmes off the job. These last 5.2 days on average (see Fig. 3).

In most cases, on-the-job training follows no defined pattern and obeys no predetermined rules. Instead of this, each be-

ginner is allocated an experienced employee as supervisor. In this one-to-one training situation, the experienced employee is required to organize a learning process which responds to the newcomer's existing skills and qualifications and aims to satisfy work requirements in the first few years of employment. This informal learning process under close supervision generally lasts between six months and one year. That it does not constitute the full training programme is underlined by the fact that many enterprises do not begin personnel assessments until employees have been on the payroll for two or three years.

On-the-job training is considered the core training element for new employees in Japanese enterprises, while off-the-job training is seen as playing a complementary role. Independent learning (jiko keihatsu) was the third type of training mentioned. This may take the form of programmes run by the enterprise or simply rely on the employees' own initiative. Some enterprises with particularly elaborate training strategies expect their higher education graduates to take a certain number of courses in their first five years of employment, in similar fashion to part-time higher education assessed in credits. In most cases, the company specifies only some of the courses to be taken; the others can be chosen by the employee. Apart from that, employees can choose from a range of courses, sometimes including programmes based outside the enterprise.

New developments

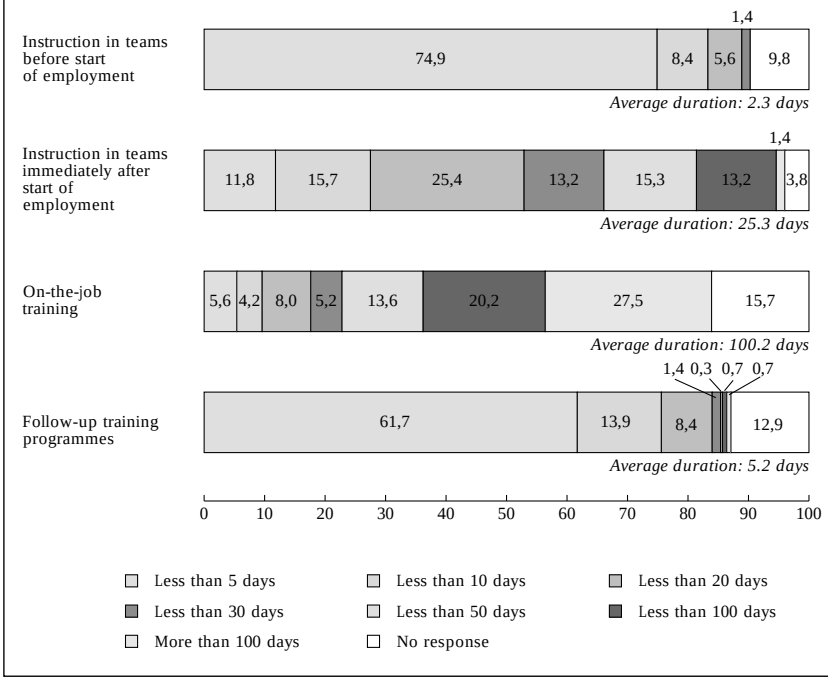
Japan and Germany have in common that a successful career is not only, and perhaps not mainly, a question of earnings and associated incentives. It is more likely that the system of vocational training and socialization is called on to provide a durable basis. In Germany, the focus is on the "occupation", i.e. pride in the nature of one's work and one's training, while enterprises are interchangeable. In Japan, by contrast, training is normally a gradual process based on the functional demands of the job in question, while socialization in the enterprise context is considered the major foundation for a successful career.

However, a number of signs have emerged in recent years to indicate that this contrast between the two countries is becoming less pronounced. In Germany, there is now a stronger emphasis on flexibility in

The Japanese situation is such that "in most cases, on-the-job training follows no defined pattern and obeys no predetermined rules (...) (although) on-the-job training is considered the core training element for new employees in Japanese enterprises."

"Japan and Germany have in common that (...) the system of vocational training and socialization is called on to provide a durable basis. In Germany, the focus is on the 'occupation', (...) while enterprises are interchangeable. In Japan, by contrast, (...) socialization in the enterprise context is considered the major foundation for a successful career. (...)"

Fig. 3:
Duration of initial training in Japan



"However, a number of signs have emerged in recent years to indicate that this contrast between the two countries is becoming less pronounced."

terms of specialized and social skills and on company loyalty, both at the recruitment stage and in vocational training.

In Japan, greater importance is now attached to specialized qualifications in many occupational fields. Career opportunities are improving for people who have a sound command of their field but are not prepared to be redeployed within the company at any time, whether this involves a change of site or duties. Some companies have introduced new career structures for specialists.

These processes do not call into question the prevalent attitudes to work, enterprise and occupation either in Germany or Japan. They do, however, supplement them and in this way moderate the contrasts.

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Europe - International

Information material, studies and comparative research

The role of the company in generating qualifications: the training impact of work organization. Summary report
European Centre for the Development of Vocational Training
(CEDEFOP)
Mehaut P.; Delcourt J.
Luxembourg, Office for Official Publications of the European Community, 1995, 130 p.
ISBN 92-827-4052-8 (fr)
FR, EN (to be published)

In order to clearly identify the role of the company in the process of generating skills, CEDEFOP carried out a series of nine national studies in EU Member States. On the basis of these exploratory surveys, the present summary report aims to identify in a comparative manner issues relating to work organization which promote new forms of skill generation. The authors then make a qualitative analysis of shifts in policies and practices and deduce the main implications for national and Community policies.

Le financement de la formation continue: quelles leçons pour la comparaison internationale?
Drake K.; Germe J.-F.
European Centre for the Development of Vocational Training (CEDEFOP)
Berlin, CEDEFOP Panorama, no. 5050, 1994, 178 pages
FR
CEDEFOP
Marinou Antipa 12
GR-57001 Thessalonica

Continuing training will have a major role to play in our response to the economic and social challenges currently facing Europe. The policies to be implemented in this area, the evaluation of their effect, and particularly the distribution of responsibilities and funding among the various protagonists are an important subject of discussion in a European continent still characterized by strong national traits. In this context, it is more important than ever to improve our knowledge of the various national situations and developments and to learn to make comparisons between them.. The CEDEFOP study on the funding of continuing training in several countries of the European Union, carried out at the end of the 1980s, formed the basis for the present report and raised a number of issues regarding the availability and comparability of information. This report provides some answers to these questions: it proposes two frameworks for reading and interpreting the data from a comparative point of view, and suggests topics and directions for comparison of the data.

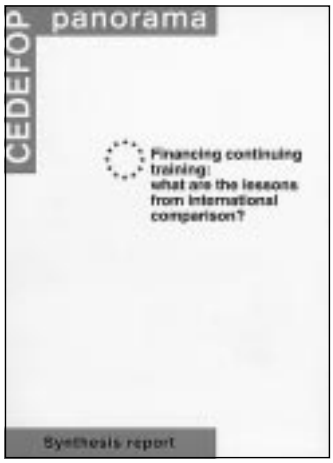
Matching training needs to training provision - Contributions to the 1993 CEDEFOP FORUM -
Clarke F.A.
European Centre for the Development of Vocational Training (CEDEFOP)
Berlin, CEDEFOP Panorama, no. 5029, 1994, 178 pages
DE, EN, FR
CEDEFOP
Marinou Antipa 12
GR-57001 Thessalonica

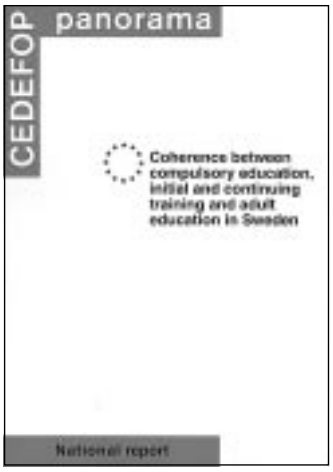
This work presents the papers which were contributed to the 1993 CEDEFOP FORUM and includes a series of national reports submitted by the participating research organizations. These reports describe the various methods and procedures used by the Member States to identify their needs for skills and their efforts to develop an adequate response in terms of training. They also include a contribution describing the structure and operation of a newly created German research network for matters relating to vocational training.

Reading selection

This section has been prepared by
Maryse Peschel
and the Documentation Service with the help of members of the national documentation network (cf. last page)

This section lists the most important and recent publications on developments in training and qualifications at an international and European level. Giving preference to comparative works, it also lists national studies carried out as part of international and European programmes, analyses of the impact of Community action on the Member States and national studies seen from an external perspective. The Section, "From the Member States", lists a selection of important national publications.





Coherence between compulsory education, initial and continuing training and adult education in Sweden
European Centre for the Development of Vocational Training (CEDEFOP)
Swedish Ministry of Education and Science
Berlin, CEDEFOP Panorama, no. 5053, 1995, 48 pages
EN
CEDEFOP, Marinou Antipa 12
GR-57001 Thessalonica

The purpose of this paper is to describe the coherence between compulsory education, upper secondary education, which in Sweden includes both vocational and general education, higher education and adult education in different forms (labour market training programmes, etc.), all with an emphasis on preparation for a life in a changing society and on a constantly changing labour market.
Also published by the Swedish Ministry of Education and Science
(ISBN 91-38-137848-4)

From administrative to customer-oriented banking. re-designing strategy, organization, qualifications and training in European banks
Bertrand O.; Grootings P.; Rombouts J.
European Centre for the Development of Vocational Training (CEDEFOP)
Berlin, CEDEFOP Panorama, no. 5052, 1994, 58 pages
EN
CEDEFOP, Marinou Antipa 12
GR-57001 Thessalonica

Based on a number of studies and trends in the banking sector, in addition to a series of talks at management level in banking institutions in a number of EU countries, the report makes a comparative analysis of main trends which have or are about to emerge in the banking sector, stressing factors which influence employment, qualifications and staff training in the sector, as well as policies implemented by banking institutions to meet such challenges. Several key questions for decision-makers at national and European level have emerged from this analysis.

Etude sur l'évaluation et la reconnaissance des qualifications dans le domaine de la restauration et de la réhabilitation du patrimoine architectural. Rapport de synthèse; rapports nationaux: République Fédérale d'Allemagne; Belgique - région néerlandophone -; France; Italie; Royaume-Uni
European Centre for the Development of Vocational Training (CEDEFOP)
Berlin, CEDEFOP Panorama, no. 5049, 1994, 91 pages
FR
CEDEFOP, Marinou Antipa 12
GR-57001 Thessalonica

On the basis of the studies on vocational profiles in the area of restoration and rehabilitation of architectural heritage - Germany, Belgium, France, Italy, United Kingdom - published in 1992, CEDEFOP has investigated the methods used to validate qualifications, particularly the mechanisms involving public authorities and the social partners and the consequences of these mechanisms, in an effort to upgrade the value of these professions on the national and trans-national employment markets.

Hairdresser and beautician training in the EU Member States
Ni Cheallaigh M.
European Centre for the Development of Vocational Training (CEDEFOP)
Berlin, CEDEFOP Panorama, no. 5051, 1994, 132 pages
EN
CEDEFOP, Marinou Antipa 12
GR-57001 Thessalonica

This dossier is intended to give concise and practical information on the training routes of hairdressers and beauticians in eleven EU Member States. The information is provided under the following headings: definition of function; type/structure of training; admission requirements; duration of training; training level; examination(s) at the end of training; name of awarding body; training providers; status of those undergoing training; job and career prospects; estimate of annual trainee intake; continuing and further training, and information sources.

Les chiffres clés en éducation dans l'Union européenne
European Commission: Directorate-General XXII - Education, Training and Youth
Luxembourg, Office for Official Publica-

tions of the European Communities,
1995, 110 pages
ISBN 92-826-9143-8
FR

Based on Eurostat data and on qualitative information taken from studies within the Eurydice network, this report sheds light on the diversity of educational systems and proposes indicators for education according to teaching levels and statistical data on teachers, institutions, expenditure, etc. The second part of the report offers details on language teaching in the European Union.

In-service training of teachers in the European Union and the EFTA/EEA countries
EURYDICE, The Education Information Network in the European Union and the EFTA/EEA countries
Brussels, EURYDICE, 1995, 206 pages
ISBN 2-87116-223-9 (fr)
DE, EN, FR

This study covers the fifteen Member States of the Union as well as the EFTA countries belonging to the Eurydice network. It deals with the organization of continuing training (legislation, structures, budgets, participation of teachers to training activities, etc.), qualifying activities as well as contents and practices of continuing training for teachers.

Tableau de bord (Synoptic table)
European Commission: Directorate-General V - Employment, Industrial Relations and Social Affairs
Brussels, Employment Observatory - General framework for Employment, no. 2, 1994, 112 pages
DE, EN, FR, NL
European Commission - DG V, Dept. V.A. 2, rue de la Loi, 200, B-1049 Brussels

On the basis of information from several observatories managed by Commission services, such as the Employment Observatory (MISEP and SYSDEM) for employment policies, MISSOC for social protection and EURI for industrial relations, these synoptic tables give the main points on employment policies and measures implemented in the Member States of the European Union.
A CD-ROM containing the data bases of these observatories is also available.

Apprenticeship: which way forward?
Centre d'Etudes et de Recherches sur les Qualifications (CEREQ)
Organization for Economic Co-operation and Development (OECD)
Paris, OECD, 1994, 172 pages
ISBN 92-64-24294-5 (fr)
EN, FR

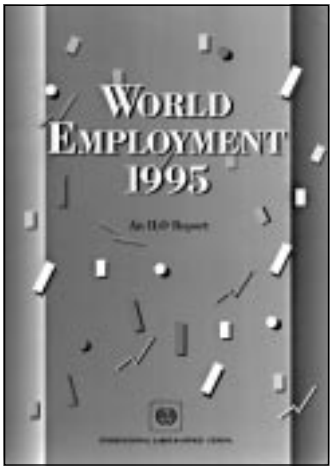
This is one of several OECD publications on the new role of technical and vocational education. It covers the points raised at an international seminar organized jointly by OECD and CEREQ (Centre for study and research on qualifications) held in Marseille in April 1994. It describes "alternance" from the point of view of international comparison and deals with its various aspects simultaneously - the pedagogical, economic and institutional aspects. It stresses the diversity of concerns in the various OECD countries as well as the various methods these countries have adopted, but also points out common tendencies. It raises questions on implementation and costs of this increasingly popular training mode.

Alternative schemes of financing training
Gasskov V.
International Labour Office (ILO)
Geneva, ILO, 1994, 151 pages
ISBN 92-2-109188-0
EN

There is a growing interest in both industrialized and developing countries in studying and reforming national systems of financing technical and vocational education and training (TVET). Based on examples of countries and industries that have developed innovative arrangements, this book addresses several issues related to financing TVET, including co-financing by governments, employers and workers. Many diverse TVET financing mechanisms exist, and each sends selective signals to its beneficiaries. The study examines both successful and unsuccessful examples of new practices, including schemes for funding public education and training, as well as apprenticeships, various types of levy-based schemes and income tax rebate incentives. The book ends with a checklist for evaluating systems of financing TVET.

Unemployment and labour market flexibility: Italy
de Luca L.; Bruni M.
International Labour Office (ILO)
Geneva, ILO, 1993, 214 pages
ISBN 92-2-108266-0
EN

Italy has traditionally experienced high unemployment in comparison with many other industrialized nations, and this has grown particularly rapidly since the mid-1970s. The fact that the Italian labour market is commonly regarded as rigid makes it tempting to link the two phenomena. In reality, however, the situation in Italy is considerably more complex, resembling a leopard skin, in that highly competitive and dynamic activities coexist with protected, inefficient sectors and processes that closely influence the working of the labour market. This provides keys to understanding these contradictory features and how their interaction has resulted in a disappointing employment performance. The dysfunctioning of core institutions and processes eventually brought Italy to near-paralysis and produced a crisis of credibility in mid-1992. Yet the study shows how that very emergency also provided the Government with the impetus to undertake radical reforms that should instil greater efficiency and equity into the system.



World employment 1995. An ILO report
International Labour Office (ILO)
Geneva, ILO, 1995, 200 pages
ISBN 92-2-109448-0
ISSN 1020-3079
EN

The task of creating sufficient new jobs has emerged as the primary challenge of economic and social policy in most countries of the world. In this context, "World Employment 1995" undertakes a comprehensive review of the world-wide employment crisis. It surveys global employment trends, examines competing explanations for the emergence of the employment crisis, and discusses major policy options for solving it. A distinctive feature of the report is the emphasis placed on the growing inter-relationships between employment problems across countries in an increasingly globalized world economy. It, therefore, argues that an enhancement of cooperative international action is an important part of the solution to current employment problems. A renewed worldwide commitment to the objective of full employment is also considered essential. This report is the first in a new series of ILO reports that will review employment issues from an international perspective on a regular basis.

Year book of labour statistics - 1994
International Labour Office (ILO)
Geneva, International Labour Office Publications, 53rd edition, 1994, 1149 pages
ISBN 92-2-009469-X
ISSN 0084-3857
EN, ES, FR

The Year Book brings together, in systematic form, a mass of data from a vast network of authoritative sources in some 180 countries. This 53rd edition includes 42 tables corresponding to nine major substantive chapters on the following: total and economically active population, employment, unemployment, hours of work, wages, labour costs, consumer prices, occupational injuries, strikes and lockouts. In the present issue, separate data by sex are shown for a greater number of employment, unemployment, hours of work and wage series. The series usually cover the preceding ten years.

Producing and certifying vocational qualifications
Mäkinen R.; Taalas M.
University of Jyväskylä - Institute for educational research
Jyväskylä, Publication series B: Theory into practice, no. 83, Kasvatustieteiden Tutkimuslaitos, 1993, 180 pages
ISBN 951-34-0165-0
ISSN 0782-9817
EN

The publication consists of selected papers prepared for an international workshop on the problems of, and relationships between, producing vocational competencies for skilled worker level occupations, on the one hand, and controlling and certifying these competencies, on the other. Part I outlines the production life and labour market contexts of vocational training and certification and dis-

cusses some problems of education and employment match in an age of recession and demands for occupational flexibility. Part II contains descriptions and analyses of the present status and developments of the vocational training and certification systems in Finland, Germany, the Netherlands, England and Wales, Scotland and the United States of America. In Part III some general and occupation-specific problems of competence-based examinations and certification of vocational qualifications are discussed. Part IV contains concluding remarks in Finnish on the topics of the workshop.

Opleidingen voor ondernemers in het midden- en kleinbedrijf: vergelijking Bondsrepubliek Duitsland - Nederland
van Hattem R.
's-Hertogenbosch, CIBB-studies, no. 4, Centrum Innovatie Beroepsonderwijs Bedrijfsleven (CIBB), 1995, 76 pages
ISBN 90-5463-048-5
NL

This publication begins with an outline and a description of the investigation framework selected and with a typology of small and medium-sized enterprises in Germany and the Netherlands. The two following chapters then give detailed consideration to the training systems in the two countries. The remaining chapters elaborate on the contents of entrepreneurial training in three professions from different sectors (electrician, bricklayer and retailer).

Le grand chantier de la formation professionnelle: l'expérience des autres pays
Paris, in: L'enseignement technique, no. 161, 1994, p. 36-39
ISSN 0184-6906
FR

This article presents the text of papers presented at a one-day seminar organized by the "Alerte aux réalités internationales" association. The countries studied and compared are France, Germany and Japan on the one hand, and the American and British systems on the other. The article also includes remarks by J.P. Jallade on Spain and Italy as well as reports by students on stays abroad.

Education - Formation - Insertion en France et en Europe: dossier
Bogard G.; Lazar A.; Thierry D.
Paris, in Actualité de la formation permanente, no. 129, 1994, p. 25-103
ISSN 0397-331X
FR

This report describes training as a tool against social exclusion in France and in Europe. It includes: a text by G. Bogard within the framework of the project on adult education and social change organized by the Council of Europe between 1988 and 1993; a contribution to a debate at the European Salon on Education (SCOLA 1993) on the notion of general training; texts presented at a workshop organized in 1994 by Développement et Emploi on the subject of enterprises and integration; an article on a study sponsored by the Délégation à la Formation professionnelle on partnerships between training organizations and integration through economy structures; the contribution of an interministerial delegate to the "minimum integration income" (RMI) mechanism, which explores the impact of this activity in terms of vocational and social integration. And finally, examples illustrate the fight against exclusion in the Netherlands, in Ireland, Great Britain and Portugal complete the European picture presented by this report.

Labour market and skill trends 1995/96
Skills and Enterprise Network
Sheffield, Employment Department, 1995, 96 pages
EN
Skills and Enterprise Network, PO Box 12, West PDO, Lean Gate, Lenton, UK-Nottingham NG7 2GB

Labour Market and Skill Trends is the Employment Department's yearly review of current national labour market trends and their implications. It is aimed at anyone developing plans to provide the skills Britain will need by the end of the decade and beyond. The report provides a useful starting point for the more detailed local and sectoral assessments that are needed to inform planners. This publication highlights some of the current national and international trends that are likely to have widespread impact on the labour market and skills over the next few years.

Le système de formation en Finlande
Quenolle M.; Perker H:
Centre for the Development of Information on Continuous Vocational Training (Centre INFFO)
INFFO-Flash no. 427, April 1995, p. 10-13
ISSN 0397-3301
FR

After presenting basic information on the socio-political and economic environment in Finland, this paper describes initial training with emphasis on vocational training and its recent development. A second part of the article deals with training for adults, either job-seekers or employed in businesses.

La formation continue en Grande Bretagne
Rainbird H.
Centre d'Etudes et de Recherches sur les Qualifications (CEREQ)
Paris, in: Formation emploi no. 48, La Documentation française, 1994, p. 65-79
ISSN 0759-6340
FR

With its emphasis on the commitment of individuals and enterprises, the British system of continuing training is not heavily regulated. After having recalled this political and institutional context of continuing training, the author analyzes the practices of enterprises on the basis of five case studies. It then places these practices within the context of a broader evaluation based on investigations on enterprises and individuals. Training continues to concentrate on management staff, qualified workers and technical personnel, and it leans towards short-term objectives to the detriment of the attainment of certified qualification which would be recognized in enterprises. This training model determined by the market reproduces existing tendencies towards vocational imbalances.

Die berufliche Bildung in der Bundesrepublik Deutschland. Spezifika und Dynamik des dualen Systems aus französischer Sicht
Lasserre R.; Lattard A.; Rother G.
Villingen-Schwenningen, in: Materialien zur Berufs- und Arbeitspädagogik, Neckar-Verlag, Band 11, 1994, 84 pages
ISBN 3-7883-0878-8
ISSN 0177-4018
DE

Seen from abroad, Germany is often considered to be one of the countries with the best system for the integration of young people into professional life and for adequate coordination of the demand for qualification in industry and business. After a short look at the past and a description of the institutional framework of vocational training, the authors examine training quality, costs for enterprises and, in part, the criterion of efficiency. The authors confirm the opinion often held in France that training enterprises play an decisive role towards the success of initial training. The authors, from the French research centre CIRAC, also make a clear point that future demands cannot be met without innovative efforts.

Quality in Norwegian education and training, from slogans to goals
Confederation of Norwegian Business and Industry (NHO)
Oslo, Naeringslivets Forlag A/S, 1995, 40 pages
ISBN 82-90878-34-6
EN

This report aims to highlight the management of resources and quality in Norwegian education. It is addressed to educationalists and administrators and considers that control of development and quality of the educational sector is lacking in Norway. In describing the present situation, it identifies the increasing importance of competence for careers and the continuous pressures and demands this places on the education system and on companies. It then concentrates on future needs which require new management structures based on targets, a system of monitoring and assessment to support them, and quality assurance at all levels, including administration, organization, curriculum, evaluation of students, etc. It is not possible for individual actors alone to implement change. The NHO wishes to be involved, and this document is part of its contribution to determining values important for reform.

Hotel, restaurant and tourism training. An international objective
Perker H.; Rolland S.; Sorand N.
Centre for the Development of Information on Continuous Vocational Training

(Centre INFFO)
Paris, Ministry of Labour, Employment and Vocational Training, 1994, 215 pages
ISBN 2-908940-77-9 (en)
EN, FR

This guide, published by Centre INFFO together with the Ministry of Infrastructure, Transport and Tourism, presents the training offered in the hotel, restaurant and tourism sectors. It lists specialist organizations open to foreign trainees and involved in international activities. Each organization is described in detail in a separate listing.

European Union: policies, programmes, participants

Council resolution of 5 December 1994 on the quality and attractiveness of vocational education and training
Council of the European Union
Luxembourg, in: Official Journal of the European Communities, C 374, 1994, p. 1-4
ISSN 0378-6986 (en)
DA, DE, EN, ES, FR, GR, IT, NL, PT

In this resolution, the Council states the need to increase the effort of national and Community level bodies in order to improve the quality and attractiveness on vocational training and, in particular, to endeavour to secure the participation of undertakings in training opportunities for young people, who can only respond to the challenge posed by technological development and the rapid changes in the labour market if highly qualified. In the European Internal Market, high-quality skills and training and the learning of languages will increase further the possibility of taking advantage of the freedom of movement. All these elements should be considered when elaborating programmes and schemes for young people.

Council resolution of 5 December 1994 on the promotion of education and training statistics in the European Union
Council of the European Union
Luxembourg, in: Official Journal of the European Communities, C 374, 1994, p. 4-6
ISSN 0378-6986 (en)
DA, DE, EN, ES, FR, GR, IT, NL, PT

In this resolution, the Council requests that the national statistical offices cooperate in order to develop comparative education and training statistics. Furthermore, Eurostat and the Working Party of Education Statistics shall expedite the necessary development work to ensure supply of quality data which is comparable and as up-to-date as possible. Finally, the use of EC programmes such as TES, Training of European Statisticians, and ARION for technical and further training in education and training statistics should be encouraged.

Communication from the Commission to the Council, to the European Parliament, Economic and Social Committee and the Committee of the Regions. European Social Fund - The new objective 4
European Commission
COM(94) 510 final, 16.11.1994, 14 pages
Luxembourg, Office for Official Publications of the European Communities,
ISBN 92-77-82437-9 (en)
ISSN 0254-1491 (en)
DA, DE, EN, ES, FR, GR, IT, NL, PT

The Commission informs the EU institutions of the new Objective 4 aims within the context of employment, structural change and vocational training policies. The two main goals of this measure are to boost the competitiveness of the economy by improving companies' ability to adapt to industrial change and to promote employment by encouraging the adaptation of workers to structural changes affecting companies.

Council Decision of 15 December 1994 adopting a specific programme of research and technological development, including demonstration, in the field of training and mobility of researchers (1994 to 1998)
Council of the European Union
Luxembourg, in: Official Journal of the European Communities, L 361, 1994, p. 90-100
ISSN 0378-6978 (en)
DA, DE, EN, ES, FR, GR, IT, NL, PT

Based on the fourth framework programme concerning research and technological development, RTD, the aim of this programme is to promote, through the stimulation of training and mobility of researchers, a quantitative and qualitative increase of human resources within the Community and associated States.
The fourth framework programme of the European Community activities in the field of research and technological development and demonstration (1994 to 1998) has been published in the Official Journal L 126/1 of 18.5.94.

Communication from the Commission to the Council - Follow-up to the Essen European Council on Employment
European Commission
COM(95) 74 final, 08.03.1995, 5 pages
Luxembourg, Office for Official Publications of the European Communities,
ISBN 92-77-86631-6
ISSN 0254-1475
DA, DE, EN, ES, FR, GR, IT, NL, PT, SV

This communication proposes guidelines regarding employment and growth policies to gradually implement follow-up procedures for the employment system, as defined in the White Paper on growth, competitiveness and employment.

Proposals contained in the White Paper on growth, competitiveness and employment in Education and Training and responses to "joint opinions"
Union of Industrial and Employers' Confederations of Europe (UNICE)
European Centre of Enterprises with Public Participation (CEEP)
European Trade Union Confederation (ETUC)
Brussels, UNICE, CEEP, ETUC, 1995,
86 pages
DE, EN, FR
UNICE, rue Joseph II 40/bte 15,
B-1040 Brussels
CEEP, rue de la Charité 15/bte 12,
B-1040 Brussels
ETUC, boulevard Jacqmain,
B-1210 Brussels

This analysis has been prepared with the following aims: - to identify the points in the white paper to which the social partners have already responded, by quoting the corresponding extracts from the joint opinions; - to list the points of the white paper which the social partners have not hitherto discussed; - to highlight the arguments formulated by the social partners in their joint opinions, and more particularly the invitations and recommendations they have addressed to the European Institutions but which have not been specifically included in the white paper.

Teacher education in Europe
European Trade Union Committee on Education (ETUCE)
Brussels, ETUCE, 1995, 104 pages
DE, DA, EN, ES, FR, GR, IT, NL, PT
ETUCE, Boulevard E. Jacqmain 155,
B-1210 Brussels

This document compiles the main recommendations of the ETUCE for the improvement of teacher training, establishing principles to be debated in later discussions at Community level as well as nationally and locally.

Women and training in Europe. 50 projects which challenge our tradition
Union of Industrial and Employers' Confederations of Europe (UNICE)
European Centre of Enterprises with Public Participation (CEEP)
European Trade Union Confederation (ETUC)
Brussels, ETUC, 1995, 72 pages
DE, EN, FR
ETUC, boulevard Jacqmain,
B-1210 Brussels

This compendium of good practices, published by a working group of Social Dialogue composed of representatives of UNICE, CEEP and ETUC, is a direct response to one of the recommendations of the joint opinion adopted in November 93 by the European Social Dialogue. This recommendation, illustrated by a large range of possible activities in the area of training for women, aims at encouraging the social partners to better understand and support ways of preparing women to integration into an increasingly competitive employment market.

Europa-Mittler für Bildung und Wissenschaft
Bruns-Vohs U.; Cofalka K.
German Federal Ministry for Education and Science (BMBW)
Bonn, BMBW, 1994, 67 pages

DE
Bundesministerium für Bildung und Wissenschaft, Heinemannstr. 2, D-53170 Bonn

Increasing the Europeanization and internationality of our educational system and strengthening European consciousness through experience and teaching are the main tasks of the 90s for the realization of the European Union. Several European educational programmes are intended to make this growing together easier and expand the European dimension of education. This brochure presents information on the institutions and organizations involved in the realization of EC educational programmes in Germany, and explains their main functions.

Achieving quality in Training. European guide for collaborative training projects
Wouter Van den Berghe
Wetteren, Tilkon, 1995, 308 pages
ISBN 90-75427-01-8
EN

The idea of preparing this guide follows the COMETT conference on quality in continuing training held in Antwerp in December 1993. This methodological guide, after clarifying the various concepts of quality, proposes tools and guidelines to implement successful training partnerships.

FORCE. Kompendium, Projekte 1993/1994
European Commission: Directorate-General XXII - Human Resources, Education, Training and Youth
Luxembourg, Office for Official Publications of the European Communities, 1994, 398 pages
ISBN 92-826-7968-3
DE

This compendium lists the 299 projects selected and financed following a call for proposals in 1993. The projects last one year and take into account the element of trans-nationality promoted by Article 127 of the Maastricht treaty with the aim of ensuring high-quality training. The projects deal with changes linked to labour organization, sectoral training - retail trade, motor vehicle repair and sales, food industry - as well as contractual policies.

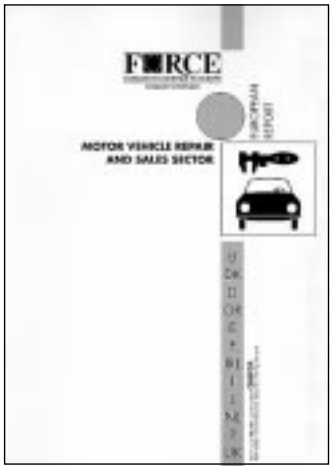
La formazione continua in Italia. Situazione attuale e misure di promozione del suo sviluppo
Institute for the Development of Vocational Training for Workers - Tools and research (ISFOL)
Rome, Franco Angeli, 1994, 202 pages
ISBN 88-204-8499-4
IT

This study, realized within the framework of the FORCE programme, summarizes the laws and regulations affecting the continuing vocational training system in Italy. It describes pilot projects implemented by enterprises and regions, and gives an overview of the development of this system.

Social Dialogue and Further Education and Training in Europe. New Challenges for the Trade Unions
Heidemann W.; Kruse W.; Paul-Kohlhoff A.; Zeuner C.
Berlin, Hans-Böckler-Stiftung (ed.), 1994, 159 pages
ISBN 3-89404-385-7
DE, EN, FR

This report, which was published within the scope of the FORCE programme, presents the results of a study carried out on behalf of the EC Commission by the Hans-Böckler-Stiftung on the issue of discussion within the European trade unions on social dialogue and the collective agreements on continued training. The results are presented in twelve national reports. These individual reports are followed by a presentation on Social Dialogue and Collective Agreements at a European level, and by an extensive description of fields of activity and trends for trade union action in the field of continuing training in a European comparative perspective. The report closes with a bibliography and a list of related documents.

Un nouveau métier. Le conseiller en formation, conseil d'entreprise
Formation continue en Europe (FORCE)
Institut de formation permanente pour les PME (IFPME)
Paris, AGEFOS PME Ile de France, 1994, 233 pages
FR
AGEFOS PME, 11 rue Hélène, F-75017 Paris



This report is the result of a trans-national project carried out by France, Belgium and Greece within the framework of the FORCE European programme. The project analyzed the profile of the training counsellor from the point of view of his role of counsellor for companies, the required qualifications and needs in the area of counsellor training. It was also intended to propose tools and means of action in SMEs. The three first parts of the report cover methodology, training plan for counsellors and practical modalities of the training. The three following sections deal with diagnostic tools for SMEs, modalities of their utilization and spread. This is followed by evaluation reports by three experts and national studies on the environment of SMEs and the needs and motivations of SME managers.

Training in various sectors of economic activity:

❑ **Training in the motor vehicle repair and sales sector: national reports**
- ➢ **Belgium report**
- ➢ **Germany report**
- ➢ **Greece report**
- ➢ **Netherlands report**
- ➢ **Spain report**

European Commission, FORCE
Prepared by CEDEFOP
Luxembourg, Office for Official Publications of the European Communities,
1994
EN

This series of reports published in English by CEDEFOP is part of a group of national studies within the framework of the FORCE programme on training practices in the commercial and motor vehicle repair sectors.
For the national reports in the original versions, please contact the national FORCE offices

❑ **Training in the motor vehicle repair and sales sector. Report for the FORCE programme. European report**
Rauner F.; Spöttl G.; Olesen K. et al.
published by the European Centre for the Development of Vocational Training (CEDEFOP)
Luxembourg, Office for Official Publications of the European Communities, 1994,
95 pages
ISBN 92-827-8913-1
DE, DA, EN, ES, FR, GR, IT, NL, PT

This report is based on the twelve national reports drawn up by research teams in the FORCE programme on continuing training in the motor vehicle repair and sales sector. The report presents the common points and main tendencies in terms of organization and training in automobile dealerships and repair workshops In an ongoing search for improvement of competitiveness, the sector offers a broad range of organizational and training practices from the more traditional to the remarkably innovative.

❑ **Training in the food and beverage industry. Report for the FORCE programme. European reports**
Burns J.; King R.; Delay F.; et al.
Prepared by the European Centre for the Development of Vocational Training (CEDEFOP)
Luxembourg, Office for Official Publications of the European Communities, 1994,
116 pages
ISBN 92-826-9192-6 (fr)
FR

Based on twelve national reports, this report presents the sector and its development and the responses received from enterprises in terms of training, highlighting the tendencies and prospects of the market on the one hand and the qualification needs on the other.

❑ **Vocational training in the retail sector. Guide to training in the retail trade**
Kruse W.; Vallvé Cid C.; Salvat Jofresa R.; et al.
Prepared by the European Centre for the Development of Vocational Training (CEDEFOP)
Luxembourg, Office for Official Publications of the European Communities, 1994,
148 pages
ISBN 92-826-9433-X (en)
EN

This guide opens with a short presentation of the main conclusions of the FORCE sectoral survey on continuing training within the retail sector. The first part of

the guide is a detailed description of training programmes developed by the ten retail firms who have been chosen on account of their diversity and the answers they give to specific training problems. The second part is designed as a methodological tool for training managers to help them plan, develop and organize training activities in the form of models classified in three different levels.

Fremdsprache - Audits und Bedarfsanalyse. Akten des Symposiums
European Commission - Directorate-General XXII - Education, Training and Youth
Luxembourg, Office for Official Publications of the European Communities,
1994, 152 pages
ISBN 92-826-8711-2
DE

This conference highlighted the lack of knowledge of European languages in SMEs. Specialist consultants in "linguistic audit" will be needed to fill this gap and thus help the SMEs. Their role will be to establish a company's training needs and develop language-learning strategies to improve its competitiveness.

Weiterentwicklung der deutschen Berufsbildung durch europäische Kooperation. Dokumentation der PETRA-Jahrestagung 1993 in Frankfurt/Oder und Kompendium der deutschen Projekte im europäischen Netz von Ausbildungspartnerschaften (1988-1994)
Bundesinstitut für Berufsbildung (BIBB)
Berlin, BIBB, 1994, 160 pages
ISBN 3-8855-568-9
DE

This publication documents the annual meeting of the German PETRA project and offers a summary of the aims, activities and results of the projects at the end of 1993. In addition to the German members in the Consultative Committee - representatives of some 70 projects carried out in 1990 - 1993. The conference documents contain, in addition to statements of members of the Consultative Committee, Standing Conference of Ministers of Culture, employers and employees - reports from the conference working groups. Furthermore, the publication extensively covers an almost complete presentation of a "compendium of German projects in the European network of training partnerships (1988-1994)". This is rounded off by an overview of projects in Germany.

ESF Evaluation Reports - Ireland:

The ESF Evaluation Unit was established in January 1992 in partnership between the Department of Enterprise and Employment and the European Commission to evaluate the effectiveness of all human resource development interventions supported by the ESF in Ireland. Since its creation, the Unit has published the following reports:

- **An evaluation of the systems used to record and report ESF eligible activity in Ireland**, 1994
- **Enterprise Measures**, June 1993
- **Industrial restructuring programme, evaluation report**, December 1992
- **Industrial restructuring training programme, follow-up evaluation report**, December 1993
- **Middle level technician / higher technical business skills**, June 1993
- **Specific skills training, evaluation report**, December 1992
- **Specific skills training, follow-up evaluation report**, December 1993
- **Survey of employers**, December 1993
- **Survey of Micro Enterprise**, July 1994
- **Vocational preparation and training programme, evaluation report**, August 1994
- **Women's training provision, evaluation report**, April 1994

Availability:
ESF Programme Evaluation Unit,
Department of Enterprise and Employment, Davitt House,
65 A Adelaide Road,
IRL-Dublin 2

From the Member States

B **Tableau de bord de l'enseignement: premiers éléments - 1994**
Roucloux J.C.
Office of statistics of the Ministry of Education, Research and Training for the francophone community
Brussels, Ministry of Education, Research and Training, 1994, 33 pages

Inaugurating a new series, this brochure offers an easy to understand explanation of the school system within the framework of the OECD considerations on education and presents an overview of the main indicators of the educational system of the francophone Belgian community.

Le fonds pour l'emploi: une occasion manquée pour les groups à risque
van Meensel R.
Hoger Instituut vor de Arbeid (HIVA)
Catholic University of Louvain (KUL)
Louvain, HIVA, 1994, 38 pages
ISBN 90-5550-051-8
HIVA, E. Van Evenstraat 2 e, B-3000 Leuven

The author of this monograph evaluates the activities of the National Employment Fund, which was created in 1989 within the framework of sectoral surveys on workforce payrolls. The objective of the Fund is the integration of high-risk groups into the employment market, i.e. young people, people with low schooling levels and the long-term unemployed. The author examines whether these objectives have been attained or whether they should be reviewed in the light of new priorities.

DK **Skolepraktik, Rapport om erfaringer 1993-94. Debat om fremtidige muligheder paa praktikomraadet**
Ministry of Education
Copenhagen, Ministry of Education, 1994, 201 pages
ISBN 87-603-0483-9
DA

The shortage of placements in the Danish dual system in 1992 led to new legislation which made it possible to offer school-based practice places compensating for placements. The provisional laws run out in 1995, and the future possibilities concerning practice places are now being discussed. This report is the contribution by the Ministry of Education and contains the following elements: experience gained by the school practice place compensating scheme, ideas for future options in this field, and a number of annexes containing a wealth of material about the scheme.

D **Die Zukunft der dualen Berufsausbildung. Eine Fachtagung der Bundesanstalt für Arbeit**
Liesering S.; Schober K.; Tessaring M. (editors)
Institute for Employment Market and Vocational Research of the Federal Employment Agency (IAB)
Nuremberg, IAB, 1994, 400 pages
ISSN 0173-6574
DE

This experts' meeting on the future prospects of the dual vocational system was based on the desire of the members of the administration of the "Bundesanstalt für Arbeit" (Federal Employment Agency), in view of the results of IAB investigations on the attractiveness and employment prospects of training in the dual system, to discuss these problems in a broad circle of experts from the fields of science, politics and practice. The discussion was intended to include topics such as costs and financing of vocational education, modernization of training contents and forms, entrepreneurial and labour-organizational changes as well as changes in vocational values. The work presented here bears witness to the broad spectrum of facts and estimates presented at the conference.

E Informe sobre los resultados de la encuesta de requerimientos de empleo y formación profesional de las empresas
Ministry of Employment and Social Security
in: Coyuntura Laboral, no. 39, Madrid, December 1994, 43 pages
ES
Centro de Publicaciones Ministerio de Trabajo y Seguridad Social, calle Agustín de Bethencourt 11, E-28071 Madrid

This publication contains the results of the third enquiry (1993) carried out by the Ministry of Employment and Social Security, the main objective of which was to discover the needs of the enterprises surveyed with regard to employment and qualification, the training activities undertaken to respond to these needs, the enterprises' expectations in terms of training and employment, and the problems that could be seen.

FIN Adult education in Finland
Ministry of Education
National Board of Education
Helsinki, Ministry of Education, 1993, 32 pages
ISBN 951-47-8627-0
DE, EN, FI, FR

This brochure presents an overview of the Finnish adult education system, its structure, organization and administrative regulatory framework. In Finland, adult education developed in an independent manner, on the basis of the activities of individual training organizations. This explains the diversity of the offer and of the organizations providing it. The organization of teaching also varies considerably. In the course of the past twenty years, adult education has taken an increasing significance within the country's educational planning and educational policies. More particularly, the last decade has been characterized by a vigorous development in adult education.

F La formation professionnelle en France
Ministry of Labour, Employment and Vocational Training - Vocational training delegation
Paris, Centre INFFO, 1995, 32 pages
DE, EN, ES, FR, IT
Centre INFFO, Tour Europe, F-92049 Paris-La Défense cedex

Developed during the French chairmanship of the European Union in the first half of 1995, this brochure describes the specific features of the French system of vocational training. The first section of the brochure describes the economic and social issues involved. The second covers future fields of activity: development of alternance training and apprenticeships, anticipation of industrial change, improvement and quality control of the training offer, the European dimension of training. The two last parts describe the vocational training system, its operation, the role played in it by the state government, the enterprises and the regions, financing modes, the training market.

L'entreprise apprenante, de l'organisation formatrice à l'organisation apprenante en passant par les théories de la complexité
Mallet J.
Aix-en-Provence, Omega formation conseil, 1994, 176 pages
ISBN 2-910747-00-X
FR

Both public and private sector enterprises must face technologial and commercial challenges of major proportions and a stepped-up pace of change. This publication proposes a view of these structural and cultural changes based on biological models centred on auto-organization phenomena and complexity theories. Written for company managers, it lists three types of support in three different chapters: reports taken from professional journals and written on problems frequently affecting enterprise managers; theroetical texts; principles of change animation allowing for the introduction and facilitation of the process of collective apprenticeship in the entire company, within the framework of an "learning organization".

Formation: la fin d'un mythe?
Hassoun M.
Paris, Panoramiques no. 19, 1st trimester of 1995, 191 pages
ISBN 2-85480-873-8

ISSN 1255-0602
FR

In France, the myth of training as a space of liberty and potential social improvement is dead. Today, training is viewed as a magic password for those standing at the door of enterprises and unable to enter. The myth is still alive, but it has changed. This overview of training in 1995 consists of eight parts presenting more than thirty contributions on the following topics: the right to training and its history, the market of training, the new rules of the game in enterprises, the experiences of training personnel, training for job seekers, the protagonists of integration, knowledge and skills, the role of the national education system in continuing training.

NL **Beleidsagenda educatie en beroepsonderwijs 1995-1999: een strategie papier: missie, beleidstrajecten, middelen**

Ministry of Education, Culture and Science
Zoetermeer, Ministry of Education, Culture and Science - Section for vocational training and adult education, 1995, 33 pages

This strategy paper defines government administration with regard to vocational training and adult education for the period from 1995 to 1999. On the basis of a mission formulated for the vocational training and adult education sector, this article gives a number of administrative strategies which support the process of institutional change. At the same time, this administrative agenda encourages dialogue between the Ministry of Education, Culture and Science, vocational training and adult education institutions as well as their cooperating partners.

P **Avenidas de liberdade - Reflexões sobre política educativa**

Azevedo J.
Lisbon, Edições ASA, 1994, 303 pages
ISBN 972-41-1536-4
PT

This publication is a personal testimony, and according to the author it is dedicated to all those who believe in the necessity of a union of pupils, teachers, parents, economic and social agents, NGOs and educational organizations - a union indispensable for positive development in the educational system. The author's thoughts on educational policy cover the tendencies of the past twenty years in the educational system, its near future, primary, secondary and art teaching, teachers, the role of the State, the quality of schools and the evaluation system.

UK **The National Development Agenda 1995: developing the national vocational education and training systems**

Employment Department
Sheffield, Employment Department, 1995, 61 pages
EN
Employment Department, W715 Moorfoot, UK-Sheffield S1 4PQ

This document sets out the Employment Department's plans to work with others to improve the capacity of vocational education and training to help people acquire new skills and new knowledge needed by a modern competitive economy. It details the latest initiatives with which the Department is involved, including those arising from the 1994 White Paper "Competitiveness: Helping Business to Win". It provides outlines of the programmes and details the relevant contact names and addresses.

Le système éducatif
Vasconcellos M.
Paris, Editions La Découverte
1993, 126 pages
ISBN 2-7071-2266-1
FR

Entre Lineas. Apuntes para la educación popular
Federación Española de Universidades Populares (FEUP)
Madried, FEUP, 1994, 189 pages
ES
FEUP, Los Madrazo, 3, 1°,
E-28014 Madrid

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