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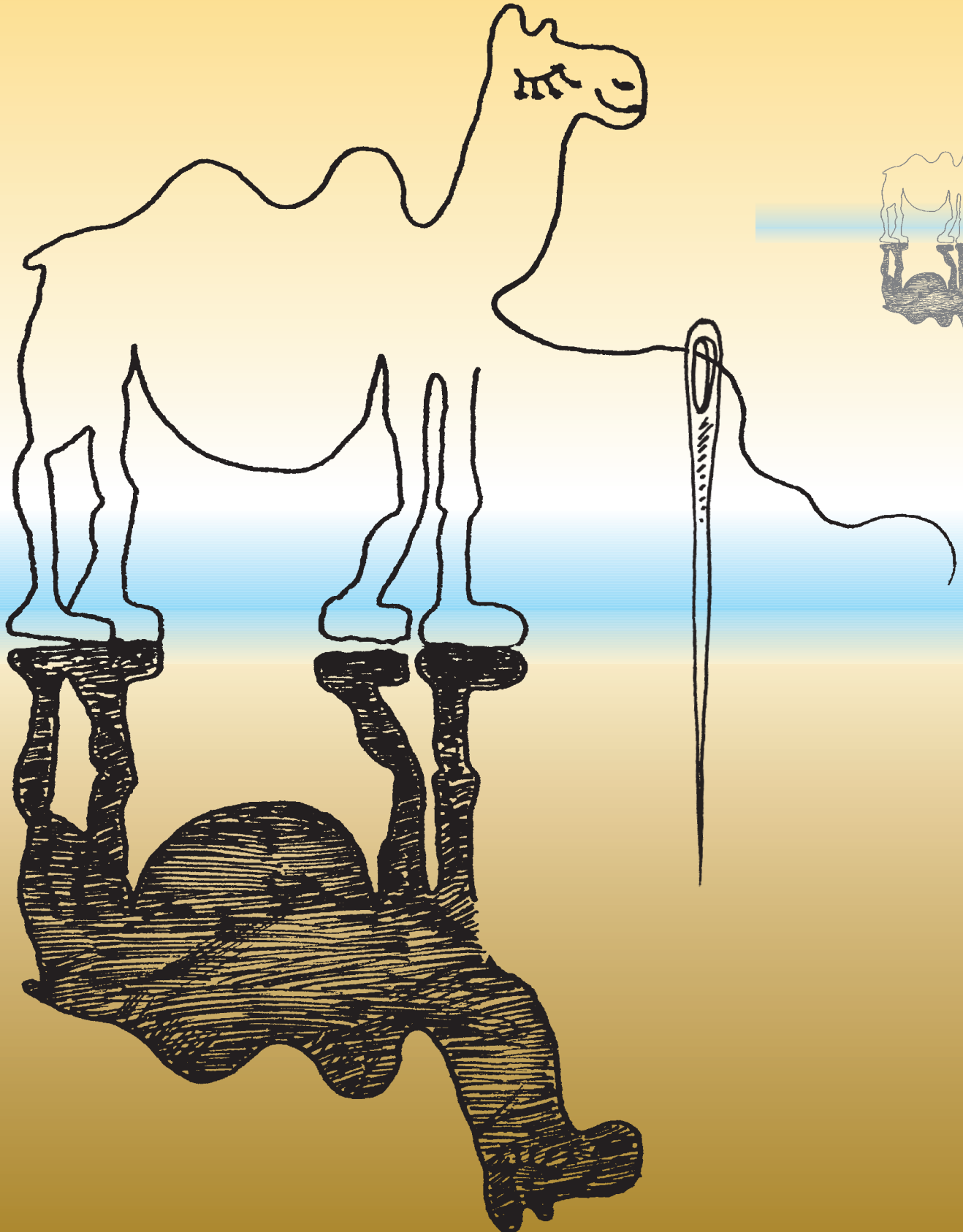

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Cedefop assists the European Commission in encouraging, at Community level, the promotion and development of vocational education and training, through exchanges of information and the comparison of experience on issues of common interest to the Member States.

Cedefop is a link between research, policy and practice by helping policy-makers and practitioners, at all levels in the European Union, to have a clearer understanding of developments in vocational education and training and so help them draw conclusions for future action. It stimulates scientists and researchers to identify trends and future questions.

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- **promoting competences and lifelong learning;**
- **facilitating new ways of learning for a changing society;**
- **supporting employment and competitiveness;**
- **improving European understanding and transparency.**

The opinions expressed by the authors do not necessarily reflect the position of Cedefop. The *European Journal Vocational Training* gives protagonists the opportunity to present analyses and various, at times contradictory, points of view. The Journal wishes to contribute to critical debate on the future of vocational training at European level.

Interested in writing an article ... see page 98

Table of contents

Research

Vocational training policy analysis

Case studies

Reading

The employment status of youth: elements of a European comparison

Thomas Couppié
Céreq

Michèle Mansuy
Céreq

This article gives an overview of the results of research conducted within the CATEWE project, which is funded through the TSER programme. Following a discussion of the problems confronting researchers working on school-to-work transition in the various Member States of the European Union, it goes on to present the results of a varied set of indicators related to transition on the basis of an original methodological approach. Although the authors remain modest as far as their results are concerned, these are nevertheless of interest, even if not very unexpected.

European labour market beginners tend to be more affected by unemployment than experienced workers; those without qualifications are the most vulnerable. More easily taken on following unemployment, they also run a greater risk of losing their job, although there are considerable internal differences within Europe in this respect. The extent to which a certificate affects the risk of unemployment varies considerably between the Member States. The presence of juniors in the various sectors of employment also remains very heterogeneous.

The transition from school to work is a subject of social science research in many countries, notably in EU Member States (Ryan, 2001). However, a comparative review of the national literature (e.g. Robert, 1995; Hanna, 1999a) reveals profound disparities of approach – in the questions raised, in the field of investigation, in the methods developed and in the tools put in place. Accounting for this diversity of approach, the present article builds comparative indicators in order to shed some light on the particular status of beginners in European labour markets.

1. What categories should be taken into account in a comparative analysis of youth transition in Europe?

France, Germany and the United Kingdom present three distinct configurations – a clear illustration of the difficulties encountered in attempting to establish a common definition of transition into the labour market.

In France, school-to-work transition as a field of research was developed on the basis of an institutionally commissioned study which explored the nature of relations between educational programmes and employment (Tanguy, 1986). From the 1970s onwards, the French government, as the agency responsible for the organisation of initial education, actively contributed to the development of this research field by setting up specific institutions (such as the French centre for research on education, training and employment, CEREQ and the centre for employment studies, CEE) and observation instruments (ONEVA([1]), school-to-work transition audits). Initially, in line with governmental planning policy, this research was conducted in order to help steer vocational training policy in accordance with structural trends in the labour market and to anticipate skills needs (Affichard, 1984). Subsequently, however, rising youth unemployment and the particularly precarious status of young people in the labour market, compared to other categories of the labour force, widened the scope of the commissioned studies (Affichard, 1985; Zilberman, 1987). The methods selected and the form of the tools introduced followed on from these objectives. Specifically, ONEVA was built up on the basis of large-scale national statistical surveys providing complex information on youth vocational pathways. *Based on the concept of initial education leavers*, a group at the crossroads between the state-run education system and the labour market, they describe in detail the first years of young people's working life and cover all levels of education.

In contrast, a substantial number of German studies explored the "organised transition system" – i.e. vocational and post-secondary programmes - the keystone of which is the "dual system" (Heinz, 1995). This transition system is based on a two-step process of adjustment: allocation of youth first to educational programmes (or apprenticeship in the case of the dual system) and subsequently to employment (Méhaut, 1993*).* This system is organised on the principle of cooperation between industry, the social partners, the Länder and central government (Verdier, 1999). In this framework, *the status of learner and worker are no longer opposed but may be combined* (Marry, 1995). Despite the absence of any strictly mechanical relationship between these two stages, attention has focused on the phase of the allocation of young people to educational

programmes as the key point determining future careers (Heinz, 1995). Studies on the status of youth coming out of education tended to play a more peripheral role in research, all the more so as the labour market status of German youth was long perceived as "exemplary" in comparison to that of other categories of the workforce. These studies essentially focused either on verifying the match between the educational pathways followed by young people and the occupational groups they subsequently entered, or on sub-populations with "precarious transitions" (Heinz, 1995; Hannan, 1999a). This partly explains the comparatively lower number of these studies and the fact they are more specific, not nationally representative and fail to collect longitudinal information.

The United Kingdom is a third case in hand. Here, research on the transition from education to work is fragmented and largely disregards the relation between school and work (Raffe, 1995). This situation can be explained historically by the weakness of school as an institution in the United Kingdom due to the limited role of the state in the organisation of education (Tanguy, 1995). This role is traditionally limited to regulating the education market, intervening directly only in compulsory general education. This market-led regulation has generated a high diversity of training courses and in institutions offering them. As a result education tends to be less closely associated with a specific age group as elsewhere, is concentrated to a lesser degree on a specific time of life and is less confined to specialised institutions ([2]). This situation has maintained a comparatively low level of youth participation in education in the United Kingdom, given the competition it faces from the labour market (Tanguy, 1995; Marsden, 1990). As a result, a substantial proportion of vocational training takes place post-labour market entry (Raffe, 1995) and *education and employment are not such distinct entities as in France* (Tanguy, 1995). Research on the labour market integration of young people shows a certain dividing line between two principal fields. The first of these is centred on the labour market – theories of segmentation and the status of young people in different segments (Ashton, 1995). The second is more focused on the pathways within the education system and exploration of youth choice on the basis of surveys on the progress of youth cohorts (Raffe, 1995). This largely explains the originality of the follow-up surveys conducted in the United Kingdom. They are constructed on the basis of the future of an entire generation, regardless of the educational status or labour market of the respondents. Youth people are generally surveyed from the age of 16 – the minimum school-leaving age – to 19, when the principal training choices are taken (Raffe, 1995).

A comparative cross-country analysis of youth transition is therefore an arduous task, from both the theoretical and the practical point of view. In fact, it seems the meanings given to the concept of school-to-work transition cannot be transferred easily from one country to another. Moreover, no common statistical tool exists specifically for this purpose. A traditional response to this problem is to shift the subject matter of the study from labour market integration per se to the working status of youth on the basis of age cohorts. This approach accounts for the weakness of relevant international statistical sources and has the merit of objectivising the category of analysis, whose construction can be strictly comparable from one country to another. Up to a certain point it has the further merit of highlighting transnational regularities as well as contrasts in the facts observed. But this approach has its limits. Indeed, as many authors have emphasised (e.g. Rose, 1998; Couppié, 2000a; Béduwé, 1998), it tends to transform the study of a quintessentially dynamic phenomenon into observation of a population at a given point in time. As José Rose has pointed out (1998), "in terms of employment, youth has a certain meaning provided that we specify that it is a not a question of the age in itself, but that age in terms of access to employment. Labour market seniority is an important criterion since it reveals a gradual loss of the singularities of entrants […] and confirms the importance of occupational socialisation and the acquisition of experience". By definition, age-based statistics group together young people with very unequal work experience. But obscuring the role of experience in this way may give rise to problems in the interpretation of other vari-

([1]) the CEREQ observatory of labour market entry.

([2]) "More than elsewhere, participants may be prepared for the same qualification by different institutions and the same institution may prepare recipients for various qualifications". (Tanguy, 1995).

ables. For example, the level of educational attainment is not equally important for persons of the same age, if one has completed his/her education and the other is still within the educational system.

A second type of response has emerged more recently. A number of comparative studies have sought to take account of the complex and varied status of the process of transition from education to work, proposing categories accounting for this heterogeneity (e.g. Barailler, 1997; Hannan, 1998; Couppié, 1998; OECD 1998a and 2000). However, the practical implementation of this strategy comes up against the lack of international statistical sources. In the absence of ideal data specifically constructed to describe the entirety of the process in the same terms in each of the countries examined, these studies have had to fall back on existing surveys. Two avenues have been explored to this end:

❏ Ex post juxtaposition (OECD, 1998a) or harmonisation (Hannan, 1998; Hannan, 1999b) of national surveys among leavers, specifically designed to study youth transition. However these projects have come up against major difficulties – coherence of the surveyed field, homogeneity of the questions, overlapping of the relevant themes, comparability of nomenclatures – considerably diminishing their potential benefit (Brannen, 2000). Moreover, this type of survey is only available in a limited number of countries (for a non-exhaustive overview cf. Raffe, 2000);

❏ Secondary analysis of already harmonised surveys on the situation of the working population (Barailler, 1997; Couppié, 1998), essentially European Labour Force Surveys and the European Household Panel. These efforts revealed the limits of such resources: various attempts to categorise school leavers ran up against both the inadequacy of the collected data – preventing the drawing of homogeneous and unequivocal conclusions from one country to another – and the sampling size.

This brief overview is indicative of the difficulties encountered in developing a common European concept of youth transition, well beyond the vagueness of the situation even at the domestic French level (Rose, 1998; Vincens, 1997 and 1998; Vernières, 1997). The concept of youth transition into the labour market appears to be highly dependent on the institutional frameworks in which labour market integration takes place. In particular:

❏ the specific features of the organisation of the education system influence what kind of qualifications it produces and how these qualifications are perceived. Allmendinger (1989) demonstrates the organisational heterogeneity of education systems by classification according to two criteria: the degrees of standardisation and stratification of the educational programmes they deliver. The degree of standardisation evaluates the relative homogeneity of qualifications produced by the different components of the system, whereas (vertical and/or horizontal) stratification takes account of the degree of differentiation of the educational offerings. In this light, the UK system shows little standardisation or stratification. The German and French systems, in contrast, are highly standardised, the former more stratified than the latter (Müller, 1998). Management of vocational training is exemplary in this respect (Aventur, 1999). The existence of an independent stream, how its pedagogical contents are defined (by the state alone or in partnership with the undertakings, occupational sectors, etc) and how programmes are delivered (school status or alternance) all combine to determine the specificity of the certified qualifications. These characteristics impact upon the nature of the awarded qualifications. Verdier and Möbus (1999) accordingly establish that a vocational qualification does not hold the same meaning in Germany as in France: it fundamentally corresponds to a rule of labour market organisational in the former and essentially represents a signal to be built upon in this market in the latter.

❏ The specific features of job market organisation and the type of occupational relations they lead to condition the way companies use educational qualifications and therefore the position they reserve for beginners. Following on from the work of Maurice, Sellier and Sylvestre (1982), various authors (e.g. Marsden, 1990) highlight the link between types of labour market, the characteristics of the jobs offered to youth and the use of

educational qualifications by the undertakings. Accordingly, internal markets tend to distinguish young beginners from other categories of the workforce and analyse educational qualifications as a signal of an individual's abilities. In contrast, vocational markets use educational qualifications to select their workforce, only to a limited extent categorising individuals according to accumulated work experience (Marsden, 1990; Eyraud, 1990).

❑ Various authors emphasise the existence of specific interdependencies conditioning youth school-to-work transition at the interface between the two systems. Marsden (1991) points to the interdependency in Germany between the structuring of apprenticeship-based vocational training and the functioning of vocational markets, the robustness of the one maintaining the robustness of the other. Hannan, Raffe and Smyth (1997) propose a taxonomy of these interdependencies. Garonna and Ryan (1989) seek to describe the extent to which they may form a system of regulation of youth labour market entry, citing various typical forms;

❑ Public policies promoting the labour market integration of young people play an increasing role in education-to-work transitions. A convergence of public employment policy systems in Europe is not to be observed at the moment. In their work on employment policies in Europe and the United States, Barbier and Gautié (1998) emphasise the need to understand the national and social context in order to proceed to a substantiated comparative analysis. The authors contrast three major families of public policies: the first is associated with the liberal type of social state (the United States, the United Kingdom), the second with the conservative/corporatist type (with variants in France, Germany and southern Europe) and the third the social-democratic type of social state (Scandinavia). They conclude that despite progress towards European integration, national competence in matters of employment policy remains predominant. Gautié and Lefresne (1997) update the ideal types formulated by Garonna and Ryan, integrating the diversity of forms of public youth employment aids and their contribution to national systems of school-to-work transitions.

Quantitative comparative analyses of youth transition have often neglected these institutional frameworks due to a lack of resources. In the following, we will therefore start by illustrating a number of both practical and theoretical difficulties such studies have encountered. Disparities in paces of exit from training and in the structures of levels of educational attainment are two examples of the diverse production of the different education systems. The variable importance of intermediary states in which young people combine work and learning, shows how difficult it is even to describe the process of transition into the labour market.

We will then go on to present a new kind of comparative analysis of youth transition in the framework of the CATEWE project (Comparative Analysis of the Transitions from Education to Work in Europe), again based on the Labour Force Surveys. Its originality lies in that it seeks to apply an approach based on labour market seniority while envisaging the existence of specific stages in the transition process. This approach naturally implies integrating some of the institutional characteristics specific to each education system.

A differentiated pace of leaving training

Compulsory schooling is common to all EU Member States and, although the minimum school-leaving age varies across countries, virtually all youngsters below 15 are still in school. Beyond the age of 15, participation in the education system falls in proportion to age (Graph 1, from Couppié, 2001). All national situations finally converge towards a residual level of those still in education. Nevertheless, the overall process leading the totality of a cohort to leave the education system varies considerably between countries. ([3]).

National particularities can be found throughout the entire process. The point of departure and the pace of school leaving show profound variations. While the process starts at 15 in a number of countries (Greece, Italy and Portugal), it has barely begun at 18 in others (Belgium, Denmark, Germany and France). The pace itself is far from regular, either between countries or within the same Member

([3]) Graph 1 shows the European average and the minima and maxima observed in Europe. For national curves, cf. Cedefop, 2001.

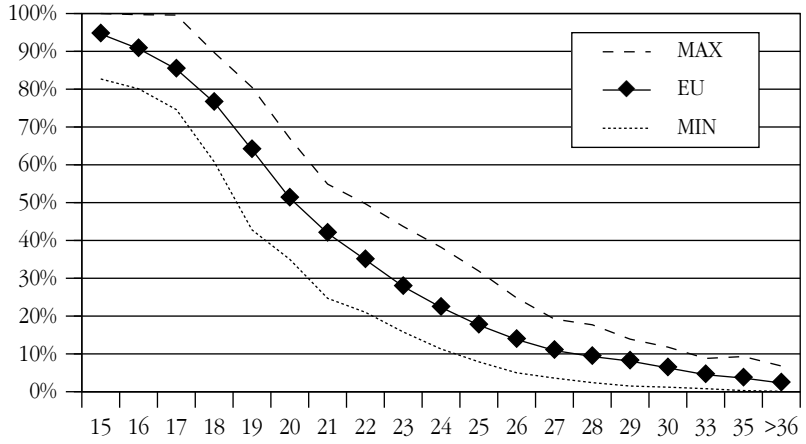
State. Some countries show a slow contraction of the number of young people in education among the youngest cohorts, followed by an abrupt downturn, concentrated on a number of cohorts, and concluding with a gradual decline (Belgium). Others show a rapid contraction of the number of youth in education, decelerating among the older cohorts (UK). In some countries, the rate of educational participation may temporarily stabilise (Austria or Sweden). Similarly, the final point of this process of exit shows major variations. The age reflecting a stabilisation of the level of educational participation (maximal variation of the rate of participation of 2 % between two successive cohorts) ranges from 24 (UK) to 30 (Italy).

The significance of the cross-country disparities may be underlined by plotting the curves showing the maximal and minimal rates of educational participation observed at each age in the European Union. The gap between these two extreme curves is never below 17 % for the 15 to 26 age bracket. It peaks at 40 % at the age of 19, with France (80.5 %) and the United Kingdom (42.8 %) constituting the two extremes. The spread of the process of exit from education among the age cohorts is a further indication of disparity. The swing from a threshold of 90 % of an age cohort in education to a threshold of 10 % was observed among eight age cohorts in Belgium (aged 18 to 25), as opposed to 16 in Italy (15 to 30).

The process of exit from education therefore shows extreme variations throughout Europe. This diversity is produced by the heterogeneity of national educational offerings and the manner in which this provision corresponds to youth educational demand.

Graph 1

Proportion of individuals in education by age – average 1995-1997



Source: Eurostat, EFT 1995 - 1997

This graph indicates the proportion of those in education at each age. The MIN and MAX curves represent the minima and maxima observed at each age in the respective EU country. Accordingly, at the age of 18, the minimum is 61 % (UK) and the maximum 90 % (France). At 25, the minimum is 8 % (Belgium) and the maximum is 32 % (Denmark).

A highly heterogeneous structure of educational attainment

A further means of highlighting the heterogeneity of national education systems is to compare the type of qualifications they produce and the pace of their production. This phenomenon is illustrated in Graph 2, extracted from the Labour Force Surveys (LFS) (Müller, 2001) which shows, for a given year, the highest level of educational attainment by age, on the basis of the international ISCED standard established by Unesco ([4]). Starting out from the assumption that behaviours show little variation from one age cohort to another ([5]), it describes the transition and performances of a fictive generation in the education system. These data are very telling. On the one hand, they simultaneously show the ages at which the first certificate of secondary education is obtained (level ISCED 3) and the residual proportion of those who have not yet graduated from secondary education at each age (level ISCED 0-2). On the other hand, they indicate the ages which are characteristic of the attainment of a first certificate of tertiary education (level ISCED 5-7) and the cumulated level of those having obtained this type of certificate.

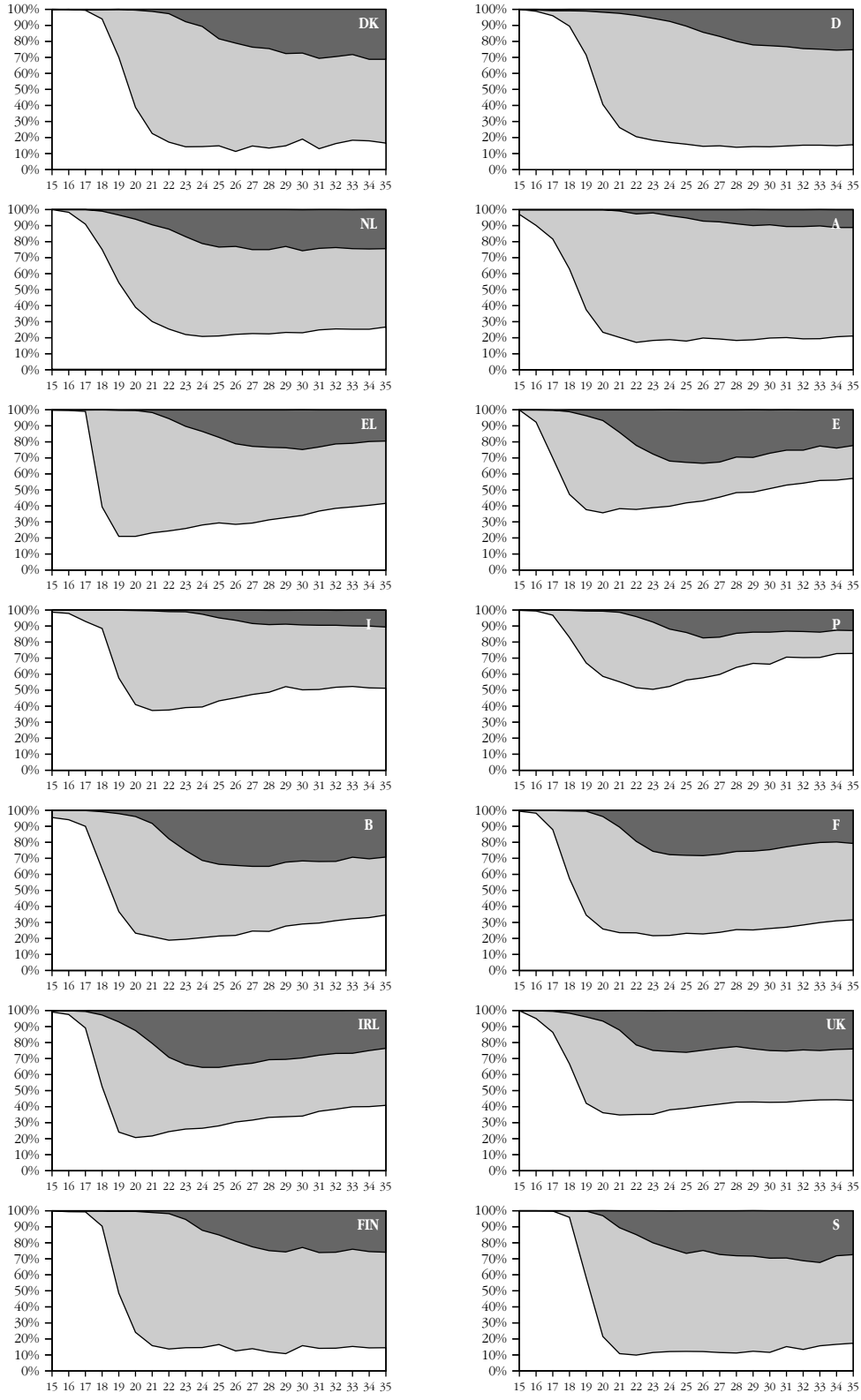
The extreme dissimilarity of national situations stands out from every point of view. The first certificate of upper secondary education is principally attained at the age of 18 to 20 in the European Union, an age bracket in which the proportion of those with no qualifications collapses all over Europe. The phenomenon is very rapid in some countries, such as Greece, where it is concentrated

([4]) Three ISCED (International Standard Classification of Education) levels of education are distinguished here: ISCED level 0-2: those who have not attained a (general or vocational) secondary education diploma, ISCED level 3: secondary education graduates who are not graduates of tertiary education and ISCED level 5-7: graduates of tertiary education. N.B. attainment of ISCED level 3 is a prerequisite for the attainment of ISCED level 5-7.

([5]) And that generational effects are negligible compared to age effects, a more or less probable hypothesis depending on the country in question. Tenable in the Scandinavian and Germanic countries, this hypothesis of stability of behaviours is no longer verified in other countries, characterised by an expansion of education within the youngest generations (Müller, 2001).

Graph 2

Highest level of educational attainment according to age – average 1995-1997



Source: Eurostat, EFT 1995 - 1997

These graphs indicate, for each age, the breakdown of the cohort by level of educational attainment in the year in question. Based on transversal data, they give an indication of how a (fictive) generation attains its educational qualifications.

on two age cohorts, 18 to 19. In contrast, in Germany and in the Netherlands it is spread over seven age cohorts, 17 to 23. Here the contrast emerges between those education systems with a monolithic upper secondary level and those presenting a more stratified (multiple pathways and certificates), or more flexible organisation (bridges between pathways, part-time educational opportunities, etc.). Finally, the proportion of those with no qualifications varies considerably from one country to another: it is above 50% in Portugal, across age cohorts, but only 10% in certain age cohorts in Sweden.

The situation of graduates of higher education shows an even wider spread. The age at which a substantial proportion of graduates (more than 5 % of an age cohort) is observed varies from 19 (Ireland) to 25 (Austria). The proportion of new graduates of higher education stabilises between 24 (Spain) and above 30 (Germany, Italy, Austria and Sweden). Whereas in some countries the process of acquisition of a first degree of higher education is concentrated on four to five age cohorts (Portugal: 23 to 26, UK and Spain: 20 to 24, Austria: 25 to 29, Belgium and France: 21 to 25), in others it is spread over more than 10 age cohorts (Sweden: 21 to 32 and Germany: 23 to 33/34). Finally, the proportion of those leaving as graduates of higher education varies between 35 % (Ireland and Belgium) to only 10 % (Italy and Austria). This spread is again a reflection of highly differentiated organisational forms of tertiary education, the cross-country comparability of which is debatable!

On the other hand, we can observe the status of secondary education graduates, *whose secondary school diploma is their terminal qualification.* This pattern is predominant in the Scandinavian and Germanic countries, in which these diplomas are essentially vocational training certificates (Müller, 2001). In contrast, certificates of secondary education are least frequently observed in Spain and Portugal, where they not only account for a quarter of a generation at ages at which the structure per level of certificate stabilises. Moreover, the majority of these certificates observed in both these countries are diplomas of general education.

Intermediary situations specific to entry into working life: combined learning and working statuses

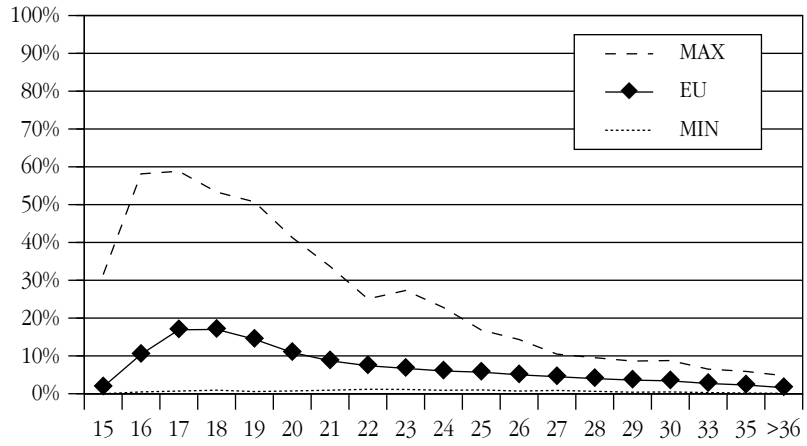
One of the characteristics of entry into working life is that young people may go through intermediary situations combining the status of scholar/student with that of employee. Although this possibility is not solely limited to this period of life, it nevertheless assumes in some case substantial proportions at this level (Wolbers, 2001). The possible combinations are very heterogeneous. They can be classified according to the relative importance of each of the activities for the young person, ranging from situations in which learning represents the principal activity (working students) to others in which working constitutes the principal activity (workers engaged in continuing training). These extremes may be illustrated by the role of the minor activity. In the former case, work often represents a means of financing learning. In the latter case, education represents a means of upgrading the worker's performance. Apprenticeship lies between these two extremes as an intermediary profile, combining the activities of work and training as joint elements in the process of producing qualifications. These different combinations do not have the same value in terms of youth transition research.

In practice, however, in surveys such as the LFS it is difficult to differentiate between statuses combining work and training according to the link between the two activities. Nevertheless, the overall importance assumed by these combined situations reveals two contrasted groups of states within the European Union. The first is comprised of those countries in which these situations play only a minor role in the phase of youth transition. Combined work and study is not particularly widespread in these countries and never exceeds more than 10 % of an age cohort ([6]) (Graph 3) and the relationship between education and employment is characterised by a swing from one activity to another. The second (smaller) group of countries comprises those in which these situations are more widespread during transition: Denmark, Germany, the Netherlands, Austria, Sweden and the United Kingdom. The propor-

([6]) Graph 3 shows the European average and the minima and maxima observed in Europe. Cf. Cedefop, 2001 for national graphs.

Graph 3

Combined learning and working statuses by age – average 1995-1997



Source: Eurostat, EFT 1995 - 1997.

This graph shows the proportion of those combining learning and working at each age. The MIN and MAX curves are to be read as in Graph 1.

tion of combined situations reaches 20 % among certain age cohorts, largely exceeding this level in certain cases. These situations are of a transitory nature, as demonstrated by the limited number of age cohorts concerned. This phenomenon is more widespread in Denmark, where it consistently effects ten age cohorts and where the proportion of combined situations accounts for over 20 % of the 15 to 24 age class. But this does not mean that young people reconcile learning and working in the same way in these countries: whereas the majority of double statuses is to be found within apprenticeship in Germany and Austria, non-coordinated combinations of learning and working predominate in the Netherlands and Sweden. Both apprenticeship and non-coordinated combinations occur in Denmark and the United Kingdom.

Following this description of a number of the difficulties encountered by comparative studies on transition, let us now examine an original approach to the analysis of the process of transition from education to work developed in the context of the CATEWE and Key Data projects (cf. Hannan, 1999b; Couppié, 2001; Cedefop, 2001; Couppié, 2000b, for a presentation of the results).

A pragmatic approach: *juniors* and *trainees* as categories of labour market entry

Given the limits of a youth transition approach based on observing age cohorts, it would seem expedient to opt for an alternative closer to the concept of "the beginner". This would simultaneously classify young people according to their labour market seniority – as opposed to a biological criterion – and distinguish between those who have not completed their education and those who have provisionally or definitively left the educational process.

Such an approach is what we are presenting here. The principles of its construction combine youth characteristics with reference to the education system, on the one hand, and experience acquired in the labour market, on the other. Two categories of youth can thereby be distinguished: *trainees*, young people who have already entered the labour market but are still engaged in education, and *juniors*, young people who have left education and have been in the labour market for less than five years.

While the principles of this approach may appear relatively simple overall, their implementation proves complex. Although this approach would strictly speaking require knowledge of exhaustive individual career biographies (7), no European or even national study provides material of this kind. Conditioned by the resources of the survey used, we therefore propose an approximation of these two categories. This approximation is based on the 1993 to 1997 LFS, i.e. before the changes to the questionnaire made in 1998 (Eurostat, 1996). Thus, the approximation of seniority acquired in the labour market is based on the estimated point of exit from the educational process, which is in turn based on the estimated the point of attainment of the highest certificate. This approximation is based on a certain number of more or less strong implicit hypotheses:

❑ The first hypothesis assumes that it is legitimate to differentiate between vocational experience acquired downstream and upstream of the point of exit. Without completely denying the existence of

(7) And rules as to the ad hoc decisions on the relevance of certain types of job experience (holiday jobs, mini jobs while in the education process) to the subject matter of the study.

the latter, it is assumed to be of a different nature, and is resumed by the prepared certificate;

❏ The second hypothesis assimilates the time elapsed since the point of exit to the labour market (job experience or job search) and therefore neglects situations of inactivity (outside of education or returns to learning). It is known that although these behaviours are very much a minority phenomenon among the under-30s, such interruptions of activity do take place which may or may not be within an institutional setting (national service). In general, the average rate of inactivity outside the educational process in Europe is below 10 % (Couppié, 2001). However this value fluctuates considerably between countries, accounting for up to 20 % of an age cohort under 30 in Greece and Italy. Moreover, this phenomenon does not apply in the same way to women and men or non-graduates and graduates;

❏ The third hypothesis assumes that the date of attainment of the highest qualification is equivalent to the point of exit; it therefore neglects divergent behaviours;

❏ The fourth hypothesis assumes that the age of attainment of a certificate can be determined without ambiguity. It presumes that each certificate marks the conclusion of a single and codified course.

Although these are strong hypotheses, given the structure of the data for the period 1993 to 1997, they are necessary to take account of some of the institutional characteristics of education systems.

In concrete terms, the information available from the LFS comprises some 100 variables, principally describing the status of the surveyed population with reference to employment at the time of the survey (according to the definitions of the International Labour Office), as well as current educational status and a number of socio-family characteristics (Eurostat, 1996). Among these variables, both the highest level of educational attainment in general education (level of secondary education) and the highest level of educational attainment in vocational or higher education are known values. It is therefore possible to differentiate between those who have participated in an educational programme in the course of the last four weeks from those who have not, on the one hand, and to identify the highest levels of educational attainment for those who are not engaged in an educational programme on the other. By reference to the different national contexts of course and certificate organisation, one can therefore seek to estimate the age of exit by reconstituting the theoretical age at which the highest level of certificate was attained. This reconstitution must clearly be based on external sources. In this instance, the authors drew on work of the OECD (1998b) on the principal theoretical ages of preparation for the terminal certificate by level of education and according to the previous course, completed by data on the minimum school leaving age for non-graduates (Eurydice database ([8])). The estimated ages finally used are presented in Table 1.

The quality of the match between the estimated and actual leaving age will depend on:

❏ the accuracy of the information available on the variety of existing certificates. The finer the differentiation between certificates, the more precise the attribution of the leaving age;

❏ the multiplicity of possible pathways leading to a given certificate (parallel access routes, bridges, etc.);

❏ the heterogeneous behaviour of participants in educational programmes. The more disrupted the school career (repeats, reorientations, interruptions, failure, and drop-out), the greater the error of imputation;

❏ the significance of rates of return to learning and, more specifically, the ability to distinguish initial from post-initial education.

Therefore all that remains to be done to estimate the time elapsed since certificate attainment is to cross this information with the observed age. Apart from the *trainees* isolated elsewhere, ([9]) two youth categories can be differentiated: *juniors* - those who have left training having attained their certificate at least five years previously([10]) - and *seniors* - those having left education who attained their cer-

([8]) Available at www.Eurydice.org

([9]) With the imposition of an age condition (15 to 35).

([10]) Their age can therefore not exceed the theoretical maximum age by more than 5 years, which means that the oldest are at most 36 years old.

Table 1

Estimation of the age of exit from the education system by declared level of certificate, based on the theoretical ages of preparation for the terminal certificate collected by the OECD

	ISCED 0-1 [a]	ISCED 2 [b]	ISCED 3 (upper secondary)				ISCED 5	ISCED 6	ISCED 7
			General education	By single course in School-based vocational training	Alternance-based vocational training	By double course in General and vocational training programmes [a]	Non university tertiary education	University tertiary education	Post-university abschluss tertiary education
Denmark	16	19	20	21	21	23	24	26	31
Germany	18	18	19	19	19	22	21	26	28
Netherlands	18	18	19	19	20	20	-	24	27
Austria	15	17	18	18	19	19	21	24	26
Greece	15	18	*19*	19	-	-	21	23	27
Spain	16	17	18	17	18	19	20	22	27
Italy	15	18	19	18	-	19	21	23	25
Portugal	15	16	17	18	18	18	22	23	26
Belgium	18	18	18	19	19	-	22	23	27
France	16	17	18	19	19	20	21	21	26
Ireland	15	17	18	18	18	19	20	22	24
Luxembourg	15	18	19	19	19	-	22*	23*	26*
Finland	16	18	19	19	19	21	23	24	28
Sweden	16	18	19	19	-	-	21	23	27
United Kingdom	16	17	18	18	18	-	20	21	24

Source: OECD, 1998b: Annex 3.

[a] School- or alternance-based vocational training
* Estimate based on the neighbouring countries in which young Luxembourgers receive higher education.
[a] and [b] Estimates based on the minimum school-leaving age and the dropout rate (Eurydice database).

tificate more than five years previously ([11]). In the continuation of our analysis, we will concentrate in the following on the category of *juniors*, at times comparing this group with *seniors*. Cf. Wolbers publication (2001) on the *trainees*.

As to be expected in the light of the preceding results, the structure by level of education of juniors and the average age of exit from the educational process show considerable cross-country variations (Table 2). Numerous profiles are encountered. On the one hand, Spain, Italy and Portugal show a majority of juniors at level ISCED 0-2. In contrast, Belgium shows a predomination of juniors at level ISCED 5-7. Between these two extremes, Denmark, Germany, Austria, Finland and Sweden show a majority of juniors at level ISCED 3. The average age of juniors at the point of exit therefore varies from one country to another, ranging from Portugal (17.1) to Denmark (22.2).

Having defined our categorisation of the population concerned by school-to-work transition, we can now proceed to examine the situations it presents in the labour market.

2. Juniors and seniors in European labour markets: contrasted positions

The process of transition into the labour market is complex and multifarious. There is no common definition of either the beginning or the end of the transition

([11]) In the following, this group is limited to those under 50 years old in order to target the heart of the established working population and rule out the impact of retirement arrangements which show considerable cross-country variations.

pathway (Rose, 1998, Vincens, 1997 and 1998). But even approximate statistical categories using the juniors and seniors approach can shed light on the particular aspects of the status of beginners.

The junior and senior categories show the relative position of beginners in the labour market in a different light. This is demonstrated in the following on the basis of three parameters: unemployment, job mobility and the presence of beginners in the various sectors of economic activity. These three dimensions provide answers to the following questions:

❑ To what extent does the transition between school and employment entail a particular risk of unemployment? Does this risk diminish with experience? At what pace? Does a certificate compensate for lack of experience?

❑ Are jobs occupied by beginners more fragile?

❑ Are there specific segments of the economy which host beginners?

Table 2

Juniors by level of educational attainment and their average age at the point of exit from the education system

	Juniors				
	ISCED 0-2 (%)	ISCED 3 (%)	ISCED 5-7 (%)	Total (%)	Average age of juniors at the point of exit from the education system (years)
Denmark	19	**53**	28	100	22.2
Germany	15	**57**	28	100	20.8
Netherlands	23	**47**	29	100	19.6
Austria	16	**75**	9	100	18.8
Greece	26	**53**	21	100	19.1
Spain	**47**	16	37	100	19.3
Italy	**52**	41	7	100	18.3
Portugal	**63**	17	20	100	17.1
Belgium	23	36	**42**	100	19.7
France	18	**46**	36	100	20.2
Ireland	25	**39**	36	100	18.7
Luxembourg	**36**	**36**	28	100	19.2
Finland	17	**52**	31	100	20.9
Sweden	18	**62**	19	100	19.2
United Kingdom	**39**	37	25	100	18.2
European Union	*32*	*43*	*25*	*100*	*19.4*

Source: Eurostat, LFS: averages 1995-1997.

Unemployment among beginners: to what extent are beginners handicapped compared to experienced workers?

The rate of unemployment among juniors (Graph 4) measures their difficulty in gaining access to employment.

The mapping of unemployment obtained on the basis of the "juniors" category shows a different picture to that obtained by age, to which we are more accustomed. In fact, when we consider the under 25s, those who dropped out of the education system at an early stage - and therefore the lowest qualified - are over-represented. Selecting unemployment among juniors as an indicator improves the relative position of the countries where studies are pursued the longest, in cases in which a certificate reduces the risk of unemployment.

All over Europe, the unemployment rate falls with labour market seniority. More than two years of experience greatly reduces the risk of unemployment.

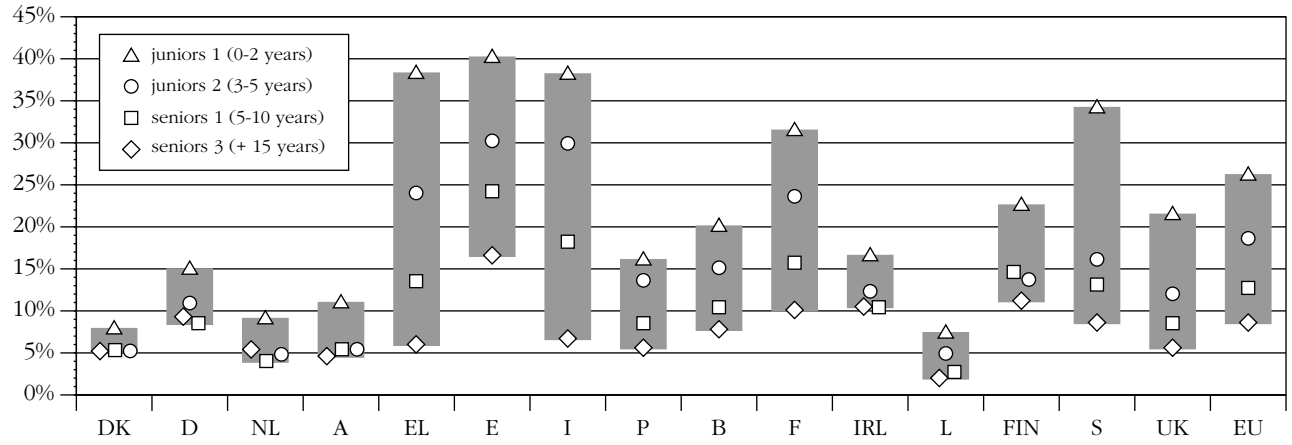
Whereas juniors with less than two years of experience show a greater exposure to unemployment in all European countries, the comparative advantage linked to seniority of more than two years in the workplace does not have the same intensity in all countries.

Whereas this phenomenon is very marked in Greece and Italy, as well as France and Sweden, it is only average in a second group of countries: Belgium, Portugal, Finland and the United Kingdom. In a third group (Denmark, Germany, Ireland, Luxembourg, Austria, and the Netherlands), experience has little impact on the risk of unemployment; only young workers with at most two years of experience are disadvantaged.

A higher level of education protects juniors from unemployment (Graph 5). A certificate above all reduces the risk of unemployment in Belgium, Germany, France, Ireland, Finland and Sweden. The strong effect of the tertiary certificate – ISCED 5-7 – is characteristic of France, Finland and Sweden. In the case of Ger-

Graph 4

Unemployment of juniors and seniors

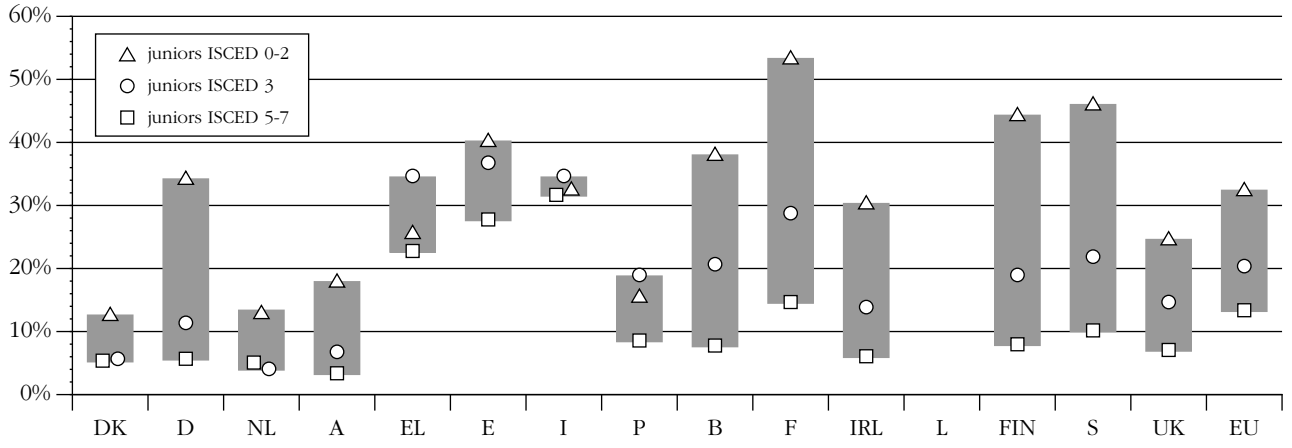


Source: Eurostat and Céreq, EFT 1997.

Unemployment rate = unemployed/active population

Graph 5

Unemployment of juniors by level of education



Source: Eurostat and Céreq, EFT 1997.

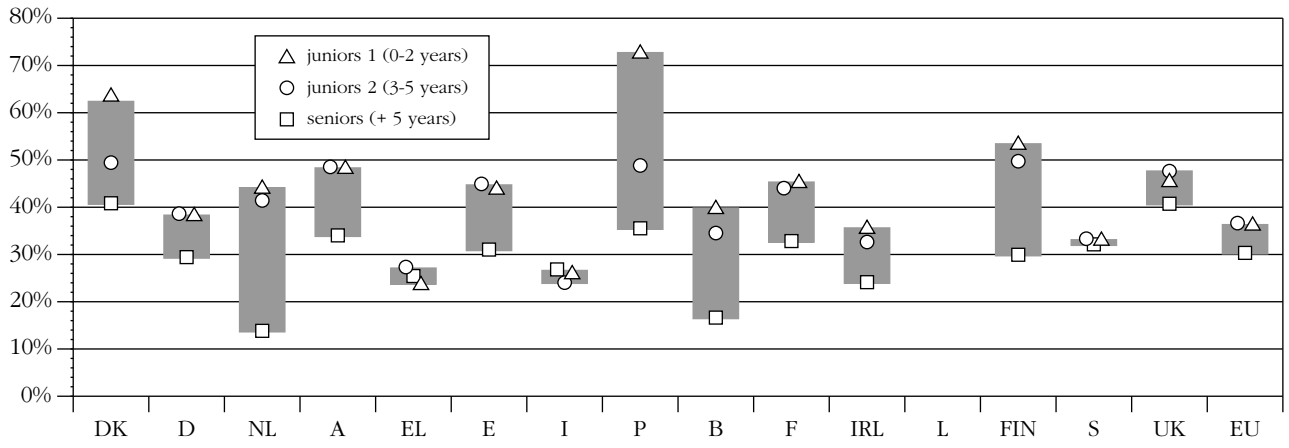
Unemployment rate = unemployed/active population

many, the divide is between level 3 – mostly those coming out of the dual system – and those who have not attained this level and are therefore deprived of access to the job market.

Note that the effect of the certificate on the risk of unemployment is particularly evident when the junior/senior definitions are applied. This effect is much less apparent when the rates of youth unemployment are compared by level of education in countries where apprenticeship and alternance are widespread. German apprentices are employed in the ILO sense – but at level ISCED 2, since they have not yet attained their dual training certificate. By definition, none of them

Graph 6

Exit from unemployment

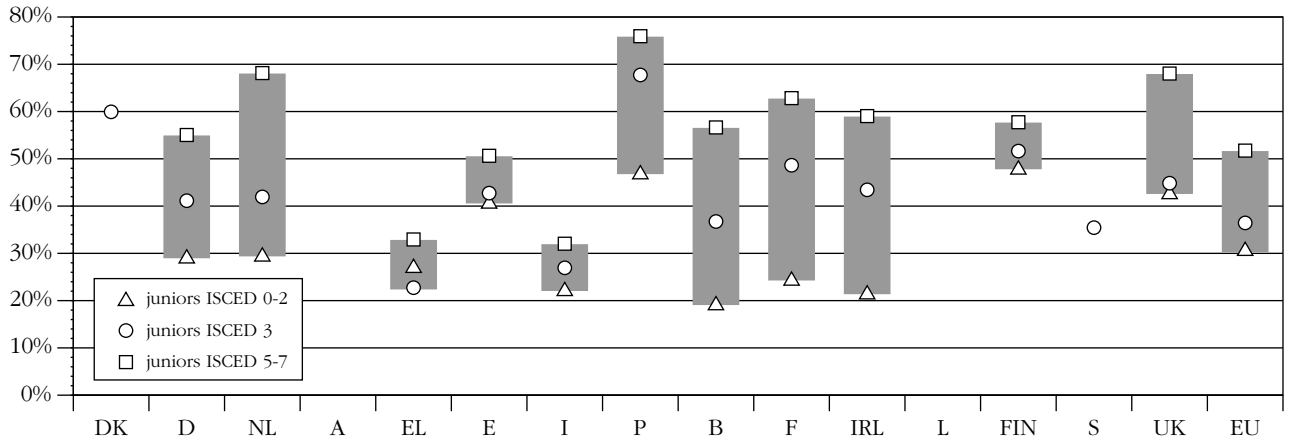


Source: Eurostat and Céreq, EFT 1997.

A and S: No distinction between juniors 1 and juniors 2.
The exit from unemployment indicator for each category is calculated on the basis of the proportion of those in employment who were out of work the previous year.
38% of German juniors with less than three years of experience and out of work the previous year were employed in 1997.
Employability = the probability of those registered as unemployed a year earlier being in employment at the time of the survey.

Graph 7

Exit from unemployment of juniors by level of education



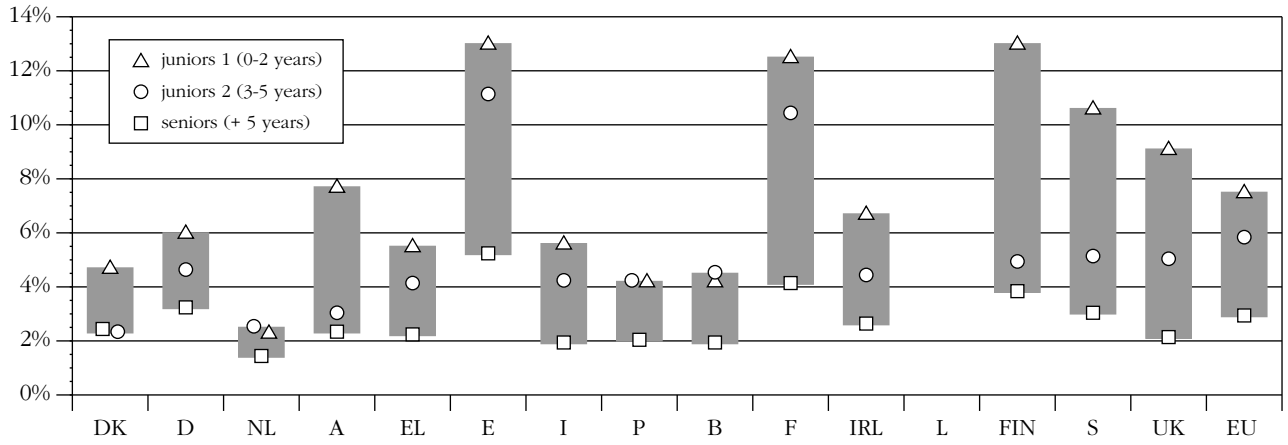
Source: Eurostat and Céreq, EFT 1997.

DK and S: Data for levels 0-2 and 5-7 insignificant.
A and L: Data insignificant.
Employability = the probability of those registered as unemployed a year earlier being in employment at the time of the survey.

is unemployed. The presence of young trainees therefore artificially reduces the unemployment rate at level ISCED 2. Consideration of juniors excludes apprentices – who are still in education. Moreover, the unemployment differential between juniors at ISCED 0-2 and ISCED 3 is much higher than the European average. The only exceptions to the moderating effect of the certificate on unemployment are to be found in Italy and Greece where, as we have seen, experience in particular protects workers from unemployment. However the handicap of juniors in these two countries is not offset by a high level of education: even with the highest level of qualifications, young people have difficulty finding a job.

Graph 8

Worker vulnerability



Source: Eurostat and Céreq, EFT 1997.

P: No distinction between juniors 1 and juniors 2
The vulnerability of a category is the proportion of those unemployed in 1997 who were in employment the previous year.
13% of Finnish juniors with less than three years of work experience employed the previous year were unemployed in 1997.

Juniors are more mobile than seniors

Juniors generally come out of unemployment more quickly

Although (with the exception of Greece and Italy) they are more exposed to unemployment than seniors, juniors are more likely to come out of unemployment in less than a year. In Austria and Sweden, the indicator of *exit from unemployment* (Graph 6) is higher among those who have some initial experience (3 to 5 years). In Belgium, Denmark, Finland, the Netherlands and Portugal, the advantage of those with five or fewer years of experience is more pronounced as far as the chance of returning to employment is concerned. Finally, a qualification, in particular a certificate of higher education, reinforces the chance of a return to employment (Graph 7). The strong effect of the certificate is again observed in countries where its impact on the risk of unemployment was observed (Belgium, Germany, France, Ireland, Finland and Sweden). In these countries, qualifications determine the queue of juniors for access to first jobs. In Austria, Portugal and the United Kingdom, where certificates only moderately reduce the risk of unemployment, a diploma nevertheless has a strong impact on the probability of finding a job or re-employment within a year.

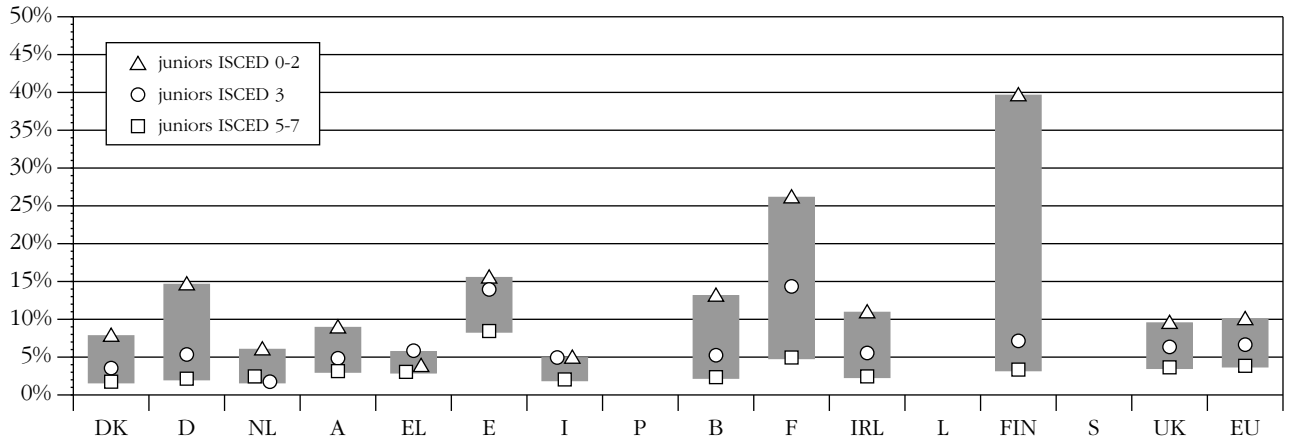
Juniors lose their jobs more frequently

Being first-time job seekers is not the only cause of the greater risk of unemployment among juniors. In comparison with seniors, they also have a higher **risk of losing a job they already hold**. This is demonstrated by the indicator of vulnerability of occupied employment (cf. Graph 8). Juniors are disadvantaged compared to seniors; in addition, the shorter the duration of their experience, the more vulnerable they are to unemployment. In France, Spain and Finland juniors are at greatest risk of losing their jobs. In these three countries, the risk gap between juniors and seniors is also wider than elsewhere. A certificate renders juniors less vulnerable to unemployment (Graph 9). This is particularly true of France and Finland and, to a lesser extent, Belgium and Denmark.

Juniors therefore present specific characteristics in their mode of access to employment. They are more exposed to unemployment, not only because some of them are first-time job seekers, but also because the jobs they hold are less stable. But out-of-work juniors are more likely to find work than jobless seniors are. Those with no qualifications at all are the most fragile: at these levels of

Graph 9

Vulnerability of juniors by level of certificate



Source: Eurostat and Céreq, EFT 1997.

L, P and S: Data insignificant.
The vulnerability of a category is the proportion of those unemployed in 1997 who were in employment the previous year.
26% of French juniors at level ISCED 0-2 employed the previous year were unemployed in 1997.

certificate, the risk of unemployment, or even exclusion from employment, is reinforced and jobs occupied are often transitory. The impact of the certificate is particularly striking in France, Finland, Sweden and Germany, and less pronounced in the other European countries.

A comparison of the rate of general mobility among juniors and seniors (the proportion of workers in employment the previous year, having left their employer a year earlier for another job or another activity ([12])) shows that:

❏ mobility is appreciably more frequent among juniors than among seniors in all countries;

❏ one country, Spain, stands out with a very high level of mobility among both seniors and juniors;

❏ two countries, Greece and Italy, show a very low level of mobility among seniors. In these two countries, juniors are also less mobile than elsewhere.

Are juniors integrated into all sectors of the economy?

To determine whether juniors are well integrated into all sectors of the economy or, on the contrary, concentrated in specific segments, we can measure the variation of the proportion of juniors of the total workforce by sector.

The response shows marked contrasts from one European country to another: the coefficient of variation (standard deviation/average) of this variable lies between below 18 % (in Denmark) and above 40 % (in Italy). It can be observed that beginners are less unevenly spread across the different sectors of activity in those countries characterised by strong links between initial vocational training and the economy (Denmark, Germany, the Netherlands, and Austria). The spread of beginners across the different sectors is average in Spain, France and the United Kingdom and particularly uneven in Greece, Italy and Sweden.

Application of the junior/senior categories allows a different description of employment and unemployment compared to the approach by age. A number of benefits of the application of the junior category can be observed: the impact on unemployment of the duration of experience is more evident than on the basis of age categories. It also makes it easier to compare the status of juniors and experienced workers, as illustrated by the indicators of general mobility or by the varied spread of beginners across different sectors of economic activity.

([12]) Return to the same employer (following an interruption of the working relationship) is attributed as mobility.

Table 3

Mobility of juniors and of seniors in Europe – those having left the organisation which employed them a year earlier (%)

	DK	D	NL	A	EL	E	I	P	B	F	IRL	L	FIN	S	UK
Mobility among juniors	30.9	22.2	25.3	17.9	17.5	54.0	14.8	25.3	26.3	29.5	26.3	-	34.3	27.0	33.1
Mobility among seniors (<50)	13.0	10.6	8.1	7.0	6.8	22.6	5.7	10.7	12.0	9.9	9.8	-	7.7	8.4	13.1

Source: Eurostat, calculations by Céreq, LFS 1993-1997, with the exception of AT: 1995-1997 and FI, SE: 1997.

Table 4

Coefficient of variation of the proportion of juniors in the various sectors of activity (%)

	DK	D	NL	A	EL	E	I	P	B	F	IRL	L	FIN	S	UK
Coefficient of varation (1997)	17.7	18.6	21.6	23.8	37.9	27.5	42.6	38.8	23.6	28.0	35.5	32.9	25.3	38.6	28.1

Coefficient of variation = standard deviation/average; the higher this coefficient. the more uneven the cross-sectoral spread of juniors.

Source: Eurostat. calculations by Céreq. LFS 1997

A number of characteristics common to European beginners thus begin to emerge: they are more susceptible to unemployment than experienced workers are and particularly fragile when they have no certificate. Although they are more easily taken on after a period of unemployment, they also run a greater risk of losing their job when they are actually in employment. Yet the internal elements of differentiation remain strong: in some European countries, unemployment among beginners very quickly returns to the level of joblessness among experienced adults (Denmark, Germany), whereas in others it remains higher in the very long term (Greece, Italy). The impact of a certificate on the risk of unemployment among juniors shows considerable cross-country variations. The presence of juniors in the various sectors is also very heterogeneous: relatively balanced in countries where occupational markets predominate, it is very much concentrated in certain segments in other countries.

Conclusion: a very stylised construction, yet one which can be fine-tuned

As we have seen, establishing categories of analysis to compare labour market integration in Europe involves a whole host of difficulties: the longitudinal information to be found at European level (European Community Household Panel) lacks sufficient sampling coverage. The other sources available, which are essentially of a transversal nature (LFS), are ill-suited to describe a dynamic phenomenon. We used these surveys in order to produce stylised indicators. Our approach is experimental, and the produced measures approximate. We have seen that the constructed categories are based on very strong hypotheses. Fortunately, the available material has evolved since we used the surveys in question, so that it should be possible to envisage the fine-tuning of the constructed categories.

In fact, **the LFS were updated** in 1998: incomes were introduced and an additional variable identifies principal status at the time of the survey. Over and above the ILO criteria of activity, the revised International Standard Classification of Education (ISCED-97) – which, in view

of the accompanying preparatory work should manage to eliminate certain mapping ambiguities (OECD, 1999) – is used, and in particular the ***year of attainment of the highest certificate is counted.*** These innovations will permit a fine-tuning of the categories of *trainees* and *juniors* used in the present context. Of the simplifying hypotheses we have used, only assimilation between the date of attainment of the certificate and date of exit from the education system will remain. One could also improve and upgrade the indicators produced, notably in the form of comparative income indicators.

However, a fundamental problem remains in the framework of the LFS: transversal data are always used to study a dynamic process. In 2000, to remedy this situation, a supplementary (so-called "ad hoc") module on vocational transition was added to the annual European LFS. This module is addressed to all those having left initial training less than 10 (or in some countries five) years previously, registers the date of the first exit from initial training, the educational level attained and the field of training engaged in at the time. Employment status immediately after completion of studies is surveyed. The first significant job (of more than 6 months) is described in greater detail (duration, date of commencement, occupation). The use of this more complete and more dynamic information should lead to more detailed comparisons. Two points seem to be of particular importance. Firstly, it will be possible to analyse ***the impact of the field of education,*** not just the level, or even the educational pathway ([13]), something which has been hitherto impossible. This should lead to a revaluation of relations between qualifications produced and vocational fields invested in. Secondly, ***the introduction of career biography elements*** – employment status immediately after completion of studies, description of the first significant job – should help make progress on a sensitive point: the starting point of transition. In fact, the hypothesis of a single- (French-type) or double-stage (German-type) definition of entry into transition is unsatisfactory for those countries in which the process frequently comprises interruptions, drop-outs and returns (as in the Scandinavian or British cases). The supplementary material the module delivers should help advance our comparative knowledge of the starting points of transition.

Even with some fine-tuning, the comparative transition indicators based on Community surveys have their limits. We have demonstrated the problems in constructing categories which are appropriate for comparative analysis. Comparisons of employment variables that have been the subject of in-depth international harmonisation can be provided, but certain dimensions of the transition process are excluded from this exercise. This is notably the case of state schemes to promote employment, which play an important role in transition pathways; but comparative statistical analysis of this field remains in its infancy. An attempted comparison drawing on national sources in the framework of the CATEWE project revealed difficulties in processing comparative statistics which are infinitely more complex than those discussed above. State intervention programmes to promote transition into the labour market in fact cover a wide range of fields, including the social handling of unemployment, flexibilisation of employment contracts, training and mixed forms between these two poles. The ranks of the target groups involved, the number and the characteristics of opened schemes, the degree of stability of the schemes over time constitute so many national parameters that their complexity is difficult to reduce.

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Pedagogical framework for online learning

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This paper discusses the characteristics of on-line education from an epistemological and pedagogical perspective and suggests a conceptual framework for on-line learning based on co-operative/collaborative learning strategies. The paper also discusses innovative ways to design on-line courses to enhance creativity and critical thinking processes. The author argues that where learning through facts, drill and practices, rules and procedures was more adaptive in earlier days, now learning through projects and problems, inquiry and design, discovery and invention, creativity and diversity, action and reflection is more fitting in the present times. So there is need for an urgent pedagogical shift to meet the demand of the online millennium learner.

1. Introduction

The development of new broadband communication services, convergence of telecommunications with computers and recent developments in communication protocol have inspired numerous proposals for the use of these tools in teaching and learning. The integration of computers and communications and their capacity to integrate and interact with one another over a far geographical distance offers unprecedented opportunities for education. The growth of these communication and computer systems, their ease of use and the power and diversity of information transfer give teachers and students access to a world beyond the classroom. This progress has the potential to transform the nature of the learning environment and its processes (Majumdar, 1997, p. 347-352). Recent technological advances, from distributed to interactive and finally to collaborative technology through the Internet and the world wide web encourage the development of a new teaching environment and a paradigm shift in the learning process.

The link between distance learning and telecommunications is becoming even stronger, yielding new solutions to old problems, innovative educational resources and new teaching/learning models. One of the most innovative and promising outcomes of this relationship is online education. This links teachers and learners in a computer network creating a fully-fledged learning community in which all individuals take an active part and make a valuable contribution to the group.

The educational arena of online learning is still in its infancy. While there are many institutions that offer online courses, an in-depth understanding of the pedagogical issues relating to online education remains an unexplored frontier. Many online courses are nothing but web pages combined with e-mail and chat rooms without any pedagogical foundation. Most current online education transfers traditional classroom instruction to an online setting, recasting reading materials as web-based materials which rely on information acquisition and rote learning. Both are low-level learning experiences.

While literature provides some evidence of the effectiveness of using online education (Kearsley et al., 1995, p.37-32), little is known about which learning strategies should be used for education and training. How can we construct these electronic teaching and learning environments so they are founded on specific epistemologies or knowledge bases? What is an appropriate pedagogical framework for online learning?

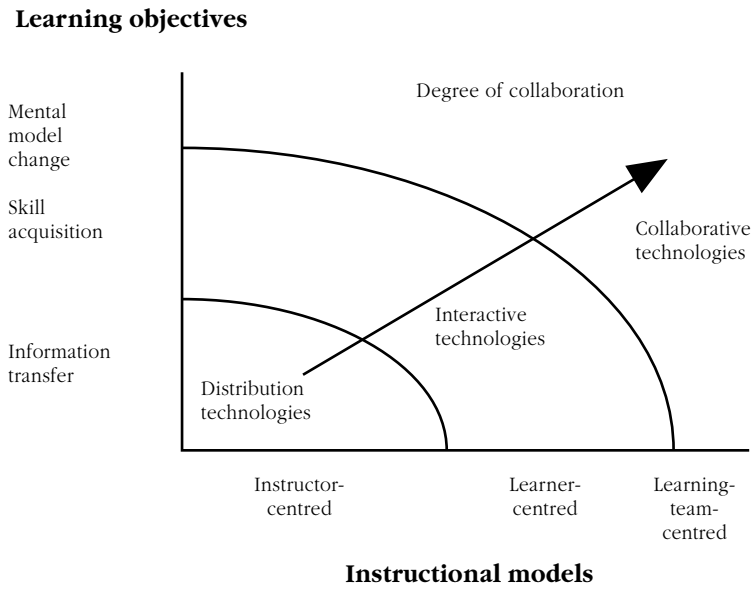
This paper discusses the characteristics of online education from epistemological and pedagogical perspectives and suggests a conceptual framework for online learning based on cooperative/collaborative learning strategies. It also discusses innovative ways to design online courses to enhance creativity and critical thought processes.

2. Distance education and online learning

Over the past century, the steady evolution of communication technology has considerably influenced the simultaneous development of distance education (DE). The first generation of distance education consisted largely of correspondence courses based on printed material where instances of interaction between the

Figure 1

Technology, learning objectives and instructional models in three generations of distance education



teacher and the learner were few and far between. Distribution technology was the foundation of this generation, which supported the instruction-centred approach and information transfer learning objectives. The underlying pedagogical assumption was transferring information, rather than interpreting or changing it. The second-generation DE system incorporated various media such as television, audio recordings and, in some cases, courseware saved on floppy disks. Teacher and learner interaction remained almost unaltered from that of the first generation, although it was supported by telephone, fax, etc. Interactive technology was the foundation of the generation that allowed the learner to progress at his or her own pace towards skill acquisition. The underlying pedagogical assumptions were a learner-centred approach – interpreting information, not merely receiving it. Thus the first and second generations of DE systems were based primarily on production and distribution of learning materials. Communication between learners was almost non-existent and DE seemed merely designed to bridge the geographical gap. Hence, education was no longer seen as a social activity centred on learner-to-learner interaction, but rather as an almost totally individual pursuit (Trentin, 1997, p. 261-270). Hardly anything distinguished DE from self-study.

The driving force behind the development of third generation DE systems is redefining learning as a social activity involving extensive use of the computer network. In DE terminology, the third-generation system is also known as online education or network-based education. In this environment all the actors in the learning process – learners, tutors and experts – are connected via a computer network to overcome isolation, enhance group interactivity and promote collective development. Collaborative technology is the foundation of this generation. It supports the learning objectives of mental model change with learning-team-centred education. The learning-team-centred approach creates an environment in which knowledge emerges and is shared through the collaboration of individuals within learning teams.

Kaufman (Kaufman, 1989) characterises the three generations as a progressive increase in learner control, opportunities for dialogue and emphasis on thinking skills rather than mere comprehension. More significantly, it is creating new types of educational organisations. Figure 1 (White Paper on *Distributed learning*, 1996) below illustrates the generations of distance education.

3. Pedagogical framework: objectivism, constructivism and eclectic model

An online educational environment can be developed from two main schools of thought: the objectivist versus the constructivist learning theory. Two different types of online educational environments can be established based on these approaches.

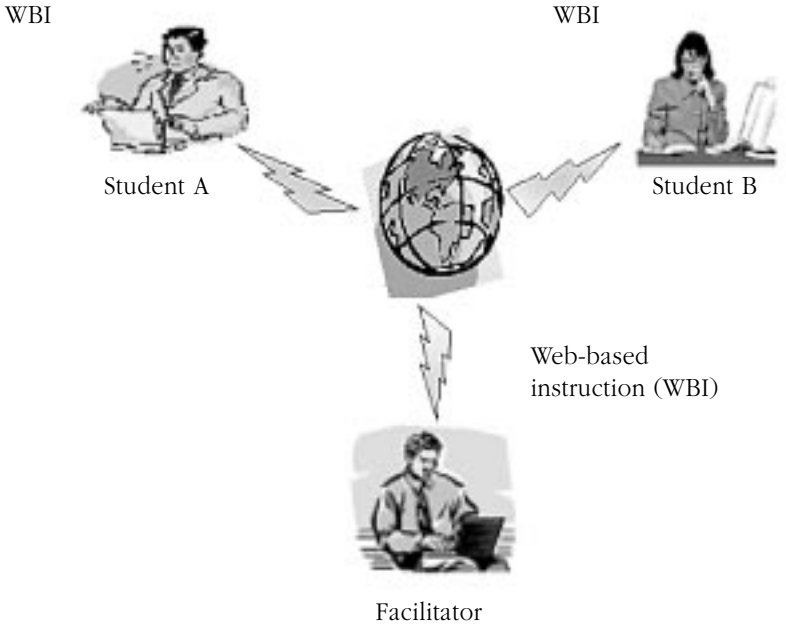
3.1 Online learning based on objectivism

In these learning environments, the students learn individually through compu-

ter-mediated communication. They interact with web-based instructional materials stored at remote locations and have minimal interaction with instructors/teachers and peers. As shown in Figure 2, Student A and Student B are geographically far apart and use their own computers to interact with the web-based instructional material stored and delivered by the instructor from a different location.

Figure 2

Online learning based on objectivism



This type of online learning environment is based on behavioural psychology, where students are presented with information which they repeat back to the teacher (reproduction). It is based on learners' reactions to a particular kind of stimulus that can be modified by rewards and punishments (Inglis, 1996, p. 28-37). The aim is to develop a planned online learning environment with structured, guided but often rigorous study courses and tasks for individual reflection and problem-solving. These courses contain learning objectives, methods, materials and an evaluation scheme defined by the tutor him/herself. The nature and authority of the learner's knowledge involves the learner undertaking and completing the tasks individually. This learning is based on the individual construction of knowledge and reproduction rather than on social processes. It contains the idea that there is a body of objective knowledge that can be delivered to learners through presentation and explanation. Today's online learning is dominated by the behaviourist school of thought and the use/role of technology as a substitute for a teacher delivering instruction. Current approaches to the online learning environment usually transfer traditional classroom instruction to an online setting, recasting reading materials as web-based materials, lectures as online lecture notes and video clips and discussion as online conferencing (Bourne et al., 1997). These are basically mere Internet-based correspondence courses which rely on information acquisition and reflect low-level learning.

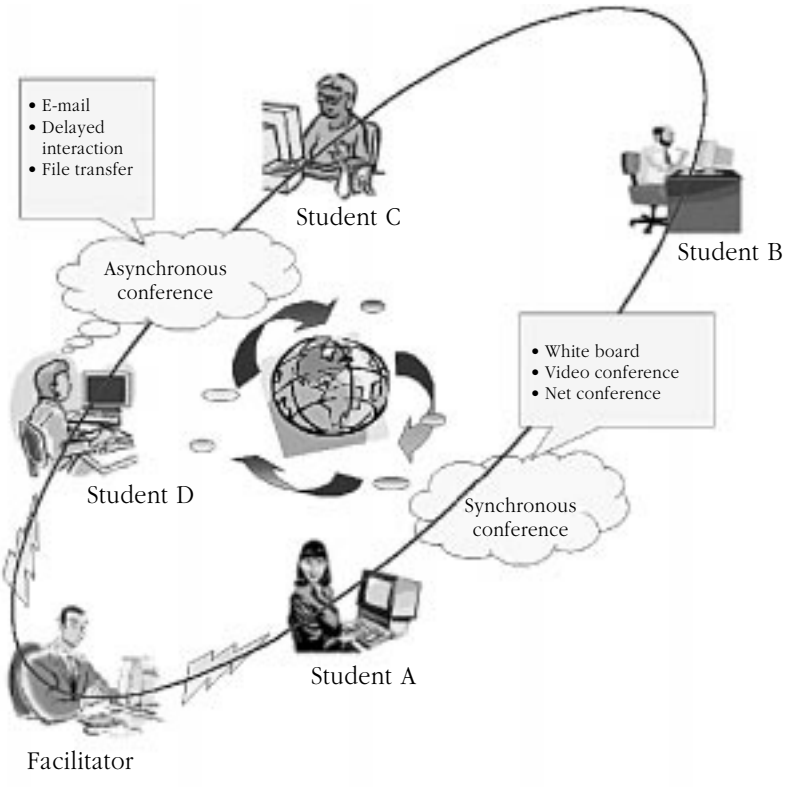
The online learning environment based on objectivism has a number of drawbacks, limitations and shortcomings (Mangal, 1990), as it does not encourage learners to develop higher-order complex skills like creativity, problem-solving, designing and decision-making abilities and the acquisition of knowledge through social interaction. For this reason it has been subject to several forms of criticism, modification and refinement from contemporary psychologists, such as constructivists.

3.2 Online learning based on constructivism

Computer-supported collaborative learning (CSCL) can be understood as an emerging phenomenon of online education that provides a framework to bring individual learners together to achieve a shared learning goal by managing their learning processes. The constructivist school of thought is considered the basis of the CSCL environment. A CSCL environment is shown in Figure 3, where Student A, Student B, Student C and Student D, who are geographically far apart, collaborate, analyse and synthesise in a group, using asynchronous and synchronous communication tools. They have a web-based curriculum and work in a shared learning space to achieve a shared learning goal using their own computers. Learners work together with peers to build knowledge.

Figure 3

Online learning based on constructivism

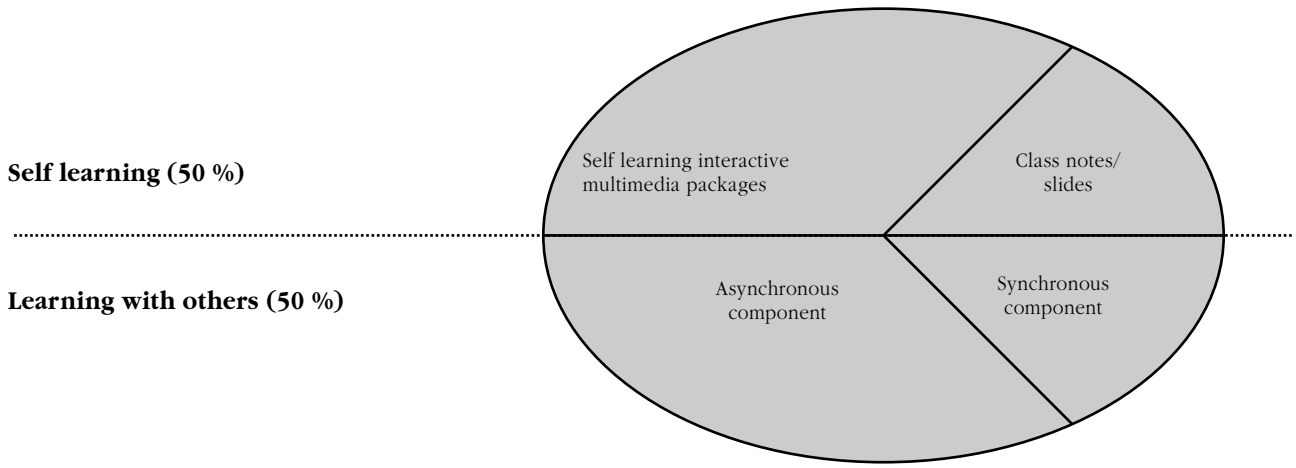


A collaborative learning environment of this kind develops complex skills like creativity, problem-solving, designing and decision-making abilities (McDonald et al., 1998, p. 6-21). Constructivism can be considered a worldview or ontology that is based on a set of learning theories which fall somewhere between cognitive and humanistic views. To create an effective learning environment from this ontology, an epistemology can be established to help explain how knowledge is formed. The constructivist theory holds that knowledge has to be discovered, constructed, practised, and validated by each learner and that learning involves 'an active struggle by the learner'. Cognitive psychologists totally oppose the stimulus/response and reward/punishment approach of the behaviourists. They argue there is more to learning and behaving than just individual responses to stimuli. The human mind does not accept information in exactly the same form and style as it is conveyed but explores it, interacts with it and reflects on it to construct knowledge from experiences. Pedagogical methods using the constructivist approach include collaborative learning and creating learning situations that enable learners to engage in active exploration and social collaboration. Passive approaches to learning assume that students 'learn' by receiving and assimilating knowledge individually and independently (Johnson, 1979, p. 51-70). In contrast, active approaches present learning as a social process, which occurs through communication with others. The learners actively construct knowledge by formulating ideas into words, and these ideas are developed through the reactions and responses of others. Collaborative learning refers to instructional methods that seek to encourage learners to work together on a given academic task. Collaborative learning is fundamentally different from traditional 'direct transfer' or the one-way knowledge transmission model, in which the instructor is the only source of knowledge and skill (Harasim, *'Online education…'*). The conversation (verbalising), multiple perspectives (cognitive restructuring) and arguments (conceptual conflict resolutions) that arise in cooperative groups may explain why collaborative groups encourage a greater cognitive development than the same individuals achieve when working alone (Sharon,1980, p. 241-247) (Webb, 1989, p.21-29).

It is believed that constructing knowledge requires teaching and learning strategies and an environment which presents learners with knowledge-building structures. There are three distinct constructivist epistemology viewpoints: a personality view, the social view and academic knowledge modes (Joyee et al., 1996). Each of these views provides an important framework for the design and development of online courses. The personality view focuses on the students and their interaction. It considers the individual personality within the context and helps individuals to understand themselves and their relationship to the world. The social point of view centres on the students constructing knowledge together. This framework assumes that knowledge-building is based on the social processes provided by the context. The academic knowledge modes concept, also known as the academic inquiry view, centres on the academic disciplines. This view asserts that the function of schooling is to provide students with the aca-

Figure 4

Learning components based on proposed eclectic model



demic toolkit to help them construct knowledge. Information processing theory (Lange, 1965) provides a good framework for the use of the academic toolkit. In constructivism, learning is seen as a constructive process in which learners play an active role and learning is based on their cognitive functions. Learners obtain new knowledge by building on their earlier knowledge and their active functioning in continuous interaction with the surrounding world, and from other learners.

Based on constructivist theories of learning, the online education environment can be designed on the assumption that learners themselves are an active agent and that they use social skills to undertake and complete group tasks. One of the limitations of this environment is that 'it does not always produce predictable learning outcomes'. The facilitators should foster the learner's constructive process and not attempt to closely control the process or result. The process of instruction and the role of instructor should be a guide to discovering knowledge and provide expert feedback during knowledge building through structured collaborative learning tasks. The learners themselves control the learning process. As far as the learner's nature and authority of knowledge is concerned, the learners undertake and complete the task in groups, using their social skills and team skills based on their experiences.

3.3 Online learning based on the eclectic pedagogical approach

To ensure a uniform and predictable learning outcome in the CSCL environment based on constructive pedagogy, an eclectic andragogical/pedagogical approach has been proposed. This model combines the most appropriate aspects of both constructivist and behaviourist perspectives. This type of learning, based on the eclectic andragogical/pedagogical approach deriving from the two perspectives, will minimise the transactional distance as propounded by Moore (Moore et al., 1996), accommodating learners with multiple learning styles and learners who are not ready for fully self-directed learning. This approach assumes that learners will acquire 50% of knowledge by themselves and the other 50% through collaboration with others. Collaborative learning includes both synchronous and asynchronous learning components. However, much of the emphasis will be on asynchronous components due to their inherent advantages of being adaptable to any

time and place. Synchronous interactions happen in real time, when learner and instructor are online at the same time and have direct contact. In contrast, asynchronous interactions take place at the learners' and teachers' convenience. The key feature of asynchronous learning is anytime, anywhere learning which utilises the conferencing facilities of the web. It may result in both immediate and delayed feedback. Immediate feedback happens when the program automatically links documents. Delayed interaction occurs due to the time required for the other learner to respond to list servers and forum and e-mail messages. Synchronous interactions require a set of tools that enable learners to see, hear and share applications across the Internet. Complex topics can be explained directly using tools such as whiteboards, Internet relay chat, audio and video conferencing.

Figure 4 illustrates this approach.

4. Collaborative learning and online education

Various theorists from socio-cultural and situated learning have stressed the importance of social interaction. It has been observed that 'students do not like to work alone, they like to share ideas with one another' (Chu et al., 1999, p. 334-338). This advantage of social interaction (learning) was difficult to incorporate into online learning programs for geographically distant learners since collaborative learning and online learning are two different education traditions. But today the collaborative/group tools can be used for social negotiation and group learning, enabling learners in groups to interact with more capable peers. Learning is distributed among the learners. Knowledge comes from a community of learners who interact. Students actively learning in cooperative groups have demonstrated an ability to generate higher-level reasoning strategies, a greater diversity of ideas, more critical thinking, and more creative responses than those learning individually or competitively (Schlechter, 1990, p. 329-341).

Various socio-psychological mechanisms make collaborative learning effective. They include: (a) conflict or disagreement, (b) the alternative proposal, (c) (self-) explanation, (d) internalisation, (e) appropriation, (f) shared cognitive load, (g) mutual regulation, and (h) social grounding (Dillenberg et al., 1995, p. 10-6 to p. 10-13).

The 'conflict between learners' mechanism postulates that when disagreement occurs between peers, social factors prevent learners from ignoring conflict and force them to find a solution. Those who support the alternative proposal referred to as 'confirmation biases' tend to design only experiments that confirm their hypotheses and to disregard any empirical finding that contradicts their hypotheses. '(Self-) explanation' occurs when a more knowledgeable peer explains a topic to another. One receives an explanation and the other benefits from articulating and integrating various pieces of knowledge. 'Internalisation' is the process of learning by verbalising in conversation. 'Appropriation' occurs when one student learns from watching and working with a more skilled partner. Apprenticeships are one form of appropriation. 'Shared cognitive load' is the sharing between learners of a cognitive burden presented by the task. 'Mutual regulation' is the way of regulating a partner's activities. 'Social grounding' is the mechanism by which an individual attempts to maintain the belief that his/her partner has understood what he/she meant, at least to an extent sufficient to carry out the task at hand. Group composition, task features and communication media play an important role in implementing collaborative learning effectively.

It has been argued (Harasim, *'Online education...'*) that the collaborative potential of computer conferencing enables learners to participate actively in their own knowledge building or knowledge creation in three ways: idea generation, idea linking, and idea structuring.

The four fundamental features of collaborative learning are:

❏ learning centred on student activities rather than focused on the teacher;

❏ emphasis on students assisting one another to find answers to areas of common inquiry;

❏ learning based on solving problems through analysis and discussion among learner groups;

❏ emphasis on creative and critical thinking.

But the question is, do we follow the above framework of collaborative dimension while we design web courses? Are critical thinking and problem-solving skills our strategies for web-enhanced creative processes? Do we exploit all the conferencing facilities offered by the web? Simply making online conferencing available and asking learners to use it is not collaborative learning. Developing online course material for enhancing creativity requires more than an understanding of hard technology i.e. bits and bytes, electronics and satellite technology, CGI, search engines and HTML. What we need to understand is the 'soft aspect' of the technology which provides a framework for developing courses in the web to enhance creativity in a collaborative environment.

A framework for pedagogical techniques for computer-mediated communication has been organised into four communication paradigms: information retrieval, electronic mail, bulletin boards and computer conferencing. They have been further classified into four techniques as characterised below (The online report on pedagogical techniques, 1995);

❏ one-alone technique (the online resources paradigm): online database, online journals, online libraries and online applications;

❏ one-to-one techniques (the e-mail paradigm): learning contracts, apprenticeships, internships and correspondence studies;

❏ one-to-many techniques (the bulletin board paradigm): lectures, symposia, and skits;

❏ many-to-many techniques (the conferencing paradigm): debates, role-plays, discussion groups, brainstorming, forums, transcript-based assignments, etc.

Most online courses use the first three classes of techniques, ignoring the many-to-many techniques, which are the core of a collaborative learning environment. Some of the key cooperative learning techniques include (Harasim, *'Online education…'*) (Harasimet al., 1995):

❏ partner activities and round table: sharing and summarising ideas via e-mail;

❏ asynchronous conferencing: discussion and reflection via bulletin board;

❏ synchronous conferencing: real time conferencing via relay chat, net meeting and video conferencing tools;

❏ group investigation: selecting a topic in a group, exploring it individually and then compiling collectively;

❏ project-based learning: learning through project planning and development in a team;

❏ other activities: panel discussions, symposia, debates, role-plays, discussion groups, brainstorming and team competition in a group, etc.

5. Creative thinking on the web

Researchers such as Davis (Davis, 1992), Perkins (Perkins, 1986) and de Bono (de Bono, *Thinking course 3rd ed.*) have championed instructional techniques that address students' independent or creative thinking. Online approaches have provided many tools and the environment for implementing instructional techniques that address students' independent or creative thinking. Web browsing software now exists to explore and search, find patterns and relationships, rank ideas, view results and send findings to peers and instructors. Clearly, the web is an ideal tool to nurture students' willingness to take risks, their commitment to tasks, curiosity, openness to experiences, broad interest, originality, imagination, intuition, attraction to novelty, artistic ability, metaphorical thinking, problem-finding skills, elaboration of ideas and readiness to break away from the norm – all of which are attributes of creative people (Davis, 1992) (Starko, 1995) (Young, J. G. 'What is creativity?', p. 77-87). The anonymity of alter egos and pseudo roles during electronic discussions encourages students to experiment with

ideas and take risks in expressing thoughts (Harasim et al, 1995). Some of the proposed techniques for how the web can enhance creativity in the electronic environment are:

❏ brainstorming and reverse brainstorming: focus on idea generation;

❏ assigning thinking roles: each person in the roundtable is assigned a role;

❏ creative writing: one starts writing, another expands the idea;

❏ just suppose: just suppose you are Education Minister – what would be your priority?;

❏ idea-spurring questions: suggestions to modify and improve;

❏ semantic webbing: propose a word in the middle of a semantic map, suggest attributes related to the concept;

❏ simulation and role-play: role-playing in a simulated environment.

It has been observed that discussion and interaction under asynchronous conferencing in a different time and different place tend to be more extended and engaging for learners than the traditional environment. Learners can give their opinion in a much more relaxed way and in their own time, which produces a congenial environment for creative reflection.

6. Critical thinking on the web

Critical thinking is reasoning, reflective thinking that focuses on deciding what to believe or do. Learners learn to look at a concept or phenomenon, aware of their own biases, and thus approach the situation objectively and logically. Creative thinking, on the other hand, is the ability to form new combinations of ideas to fulfil a need or to understand a specific natural occurrence. Despite extensive independent avenues of thought, enhancing critical thought pathways may be an equally strong dimension of the web. Some of the emerging ideas on critical thinking in the web are:

❏ graphic organiser: emphasising spatial representation as in the model, Venn diagram, etc. It facilitates critical thinking by helping learners to sort out the hierarchy and logical flow of ideas;

❏ ranking methods: to rank and categorise brainstorming ideas in the web;

❏ reflection: writing, thinking, activities for reflection and critical evaluation;

❏ mock trial and debate: encourages development of arguments;

❏ case-based reasoning: case study and comments.

Any activity which encompasses searching for causes and effects, finding patterns and relationships, ranking ideas, developing timeliness and forming taxonomies is a worthwhile exercise of critical thought (Bonk et al., 'Learner-centered web instruction...' p. 167-178). The web offers plenty of opportunities to enhance cause and effect relationships using simulation and animation programs in Web/CBT packages.

7. Guiding principles

There are several guiding principles for designing effective online learning. These include:

❏ presenting a problem-based learning environment,

❏ presenting authentic and realistic tasks,

❏ focusing on knowledge building,

❏ promoting active learning,

❏ using multimedia effectively,

❏ mixing appropriate instructional strategies,

❏ designing appropriately structured discussions,

❏ presenting a contextual learning environment,

❏ focusing on learning in groups.

Table 1

Dimensions	Undesirable	Desirable
Pedagogical basis	Instructive model	Eclectic model based on constructivism
Learning focus	Content	Learning to learn
Learning strategies	Solely interactive	Collaborative and interactive
Learning goal	Externally controlled	Autonomous
Learning theory	Behavioural	Cognitive
Teacher role	Didactic	Facilitative
Delivery modes	Fixed	Open
Learning approaches	Surface	Deep
Learning structures	Rigid	Flexible/modular
Instructional models	Instructor-centred	Learning-team-centred
Learning objectives	Information transfer	Mental model change
Learning methods	Passive	Active

The role of a student in an online environment is that of a learner, as well as a collaborator and team member. There is a paradigm shift as well as an explosion of knowledge in educational practice (Majumdar, 1999, p. 72-73) in teaching and learning in a network environment. Where learning through facts, drill and practices, rules and procedures was more adaptive in earlier days, learning through projects and problems, inquiry and design, discovery and invention, creativity and diversity, action and reflection is more fitting in the present. A need therefore exists to develop a conceptual framework for the pedagogical dimensions of online learning based on collaborative learning strategies. The desirable shift required in each of the pedagogical dimensions of online learning is presented below:

8. Implications and future work

The way a learner learns in an online setting has not been extensively studied. Designing and developing effective online courses requires a new approach to various pedagogical dimensions of the online environment. It requires acquiring knowledge of new media from communication research, gaining a pedagogical perspective from educational research and learning about group interaction from socio-psychological research. Each of these can be adapted, applied and integrated to help explain what happens in online classes and why (Coppala et al., 1999). A teaching designer using online collaborative learning must integrate increased group work, work-based learning and problem-solving to encourage higher-order thinking. Given the endless possibilities for higher-order thinking (Majumdar, 2000) and teamwork, the worldwide web probably has the power to generate novel learning strategies which will eventually be embedded in cognitive, social and cultural contexts. If the design of online courses incorporates the desired changes in pedagogical dimensions, the difference between training on the web and traditional methods could be profound. Let us work together to initiate future research into the issue.

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The implications of the skills-based approach for training design
- a paradigmatic shift in work-related training and in organisational knowledge development

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Cedefop
Thessaloniki ([1])

This article intends to disseminate and further develop basic concepts of in-company and work-related training and learning. It aims both to strengthen organisations' innovativeness and competitiveness and to empower the 'modern' worker.

Several decisions will have to be taken, conditions created and (new) attitudes developed by all partners at all decision-making levels. Despite the current short-term focus of most companies' and organisations' behavioural patterns, which generally favour immediate benefits and low-cost approaches, there is an urgent need to promote continuity and sustainability in the medium and longer term if Europe wants to succeed in modernising approaches to training, education and learning on the way to the information society. Such new concepts may substantially contribute to strengthening a wider Europe.

Three new contexts to consider when designing teaching and learning

European policy stresses the importance of individuals taking responsibility not only for acquiring initial education and training but also for maintaining that knowledge throughout their working lives. Competences, skills and knowledge are increasingly seen as central to developing social citizenship through informed participation in democratic decision-making. The introduction of new technologies and the increase in scientific knowledge demand continuous learning as a basis for socio-economic participation, which enables people to cope with and master change. The crucial question today is, however, how to empower the existing and future workforce and all citizens 'to handle uncertainties' ([2]), which co-exist within rather rigid institutional frameworks. Today's trainers and training providers must learn how to handle uncertainties and prepare for an unpredictable future.

New teaching and learning contexts have to cope with the following competences:

- ❏ flexibility, adaptability and mobility;
- ❏ learning to learn within rapidly changing contexts;
- ❏ social participation as a goal.

Stronger emphasis on flexibility, adaptability and mobility

While vocational education and training has found new favour with politicians, policymakers and planners, traditional curricula and learning processes are seen as insufficient to develop the skills and knowledge required by the new knowledge-intensive economies. Traditional definitions and explanations of professional competence or expertise were based on theories of technical rationality – that learning can be applied in predictable and repetitive ways (Edwards, 1993). Vocational education and training curricula and processes traditionally focused on imparting a fixed body of knowledge and skills required for identified tasks within occupational roles. The rapid rate of change in today's industrial society means that these roles and tasks are no longer fixed and predictable in the medium and longer term. Vocational education and training is now increasingly emphasising the flexibility and adaptability of individuals (Nijhof, 1998; Oates, 1998). Workers need to be able to adapt to new skills and processes and to update their knowledge on a regular basis. Skilled work increasingly requires the ability to deal with unpredictable occurrences. Occupational profiles mutate and migrate over time (Heidegger and Rauner, 1997). They tend to be much broader than the narrow boundaries of skills and knowledge application, which are based on a somewhat Taylorist work organisation

concept. New forms of work organisation prioritise communication skills and the ability to work in teams.

There are other significant changes in skills requirements. In the past the vast majority of people lived within five kilometres of their birthplace (Parkes, 1998). Today's society demands increasing mobility, both within countries and, in the European context, between Member States and beyond. There is a growing need for competence in foreign languages and intercultural learning. However, not only skills and knowledge content is changing. The new information and communication technology industries in particular are demanding higher skills and qualification levels.

Learning to learn within rapidly changing contexts

The pace of change in many aspects of work and work environments puts a premium upon the ability to learn. Learning to learn is fundamental if workers are to be able to adjust to changes in organisational structures, technological innovation and almost constant change in work processes. One key attribute, associated with initial skill development, which needs to be fostered, is the ability 'to pick up the threads' when skills need updating in the future, i.e. young people need to be confident about their ability to learn. Learning to learn can thus be seen in terms of the ability to consciously shape and determine one's own vocational and occupational career. Learning to learn, or self-directed learning, may thus be considered to have a social and cultural, as well as an individual, nature. Gerald Straka (1997, p. 4) proposes that self-directed learning is 'the key qualification for mastering global competition and constructing a humane society at a European level'.

Social participation as a goal

There is a growing critique that the European vocational education and training agenda is 'economistic' in viewing qualifications as necessary for adaptation to technological and economic demand. Gerald Heidegger (1997) argues that it is not enough for skilled workers to be able to respond to the changing requirements of our society. Instead they need the skills and knowledge to shape the application of technology and the social form of work themselves. Heidegger believes there is a dialectical relationship between education, technology and work. Felix Rauner (1998) also points to the inadequacy of existing taxonomies of knowledge, seeing the need to overcome the duality between academic knowledge (brain work) and vocational skill (hand work), which he traces back to the Renaissance. He suggests that in the 21st century, work-related knowledge will become central to both profitability and social interaction.

From these elements we can derive consequences for developing teaching and training within different learning environments. To advance further a sustainable information and knowledge-based society and economy, we can define several environments which are deciding factors in effective learning and teaching against the background described.

Work-related knowledge

The cognitive side of occupational competence is key to developing context-related expertise, with work-related knowledge providing the link between knowledge, which is not context-related, and experience at work, which may not necessarily be used in a generalised way. This implies both the need for active reflection on experience and a shift from information to knowledge: expertise. This cannot be developed through simple yet extended information acquisitions, but only through continuous and subtle cognitive experiences related to implementing knowledge, codeveloping personal and professional knowledge and integrating individual knowledge into the larger dimensions of knowledge possessed by groups and whole organisations.

From training to learning

For VET innovation, a shift of emphasis is required from training to learning and from mere knowledge transmission through training intervention to the facilitation of learning, i.e. the creation, use and circulation of knowledge through more complex interventions in which training is mixed with other kinds of hu-

(1) This article draws, inter alia, on a contribution to the Cedefop Reference Publication "European trends in the development of occupations and qualifications", Vol. 2, p. 163 (Attwell/Brown). See also references on p. ...

(2) See also the joint Cedefop/ETF publications on "Scenarios and strategies for vocational education and lifelong learning in Europe" in the Cedefop website library and in the Scenario window at http://www.trainingvillage.gr

man resource development (HRD). In particular, it seems that VET has to ensure that individual learners can contribute to the processes of knowledge development, transmission and diffusion within whole organisations. The focus on particular kinds of knowledge development has been identified as a key factor in innovations designed to increase the supply of creative knowledge: 'what is important for the production of knowledge value is not so much facilities or equipment in the material sense, but the knowledge, experience, and sensitivity to be found among those engaged in its creation' (Sakaiya, 1991, p. 270). Knowledge is thus assumed to be the real driving force of our era, but is also strictly linked to day-to-day problem-solving and problem-setting in work situations, and more generally with professional competences and expertise.

Different types of knowledge

When considering knowledge development in more detail, it may be useful to distinguish different types of knowledge. Lundvall and Johnson (1994) identify four kinds, each requiring different types of mastery: know-what, know-why, know-how, and know-who.

Know-what refers to 'factual' knowledge: it can be considered as equivalent to what is normally called information and is related to the knowledge 'corpus' that each category of experts must possess.

Know-why refers to academic or professional/vocational knowledge, which influences technological development and the pace and characteristics of its application in industries of every kind. In this case, knowledge production and reproduction take place within organised processes, such as university teaching, scientific research, specialised staff development, recruitment and so on.

Know-how refers to the ability to operate skilfully in different contexts (e.g. assessing the market prospects for a new product, operating a machine tool, etc.). Know-how is typically developed at the individual level, but its importance is also evident if one considers degrees of co-operation taking place within organisations and even at the interorganisational level (for instance, forming industrial networks is largely due to the need for firms to be able to share and combine elements of know-how).

Know-who is another kind of knowledge which is becoming increasingly important. It refers to a mix of different kinds of skills, in particular social skills, allowing the access and use of knowledge possessed by someone else, often through a combination of professional and personal networks (Eraut et al., 1998).

Vickstroem and Normann (1994) adopt a similar line in their attempt to develop a new perspective of corporate transformation. They distinguish between information, skill (or know-how), explanation, and understanding.

Information is knowledge of an objective kind whose importance is mainly related to its 'factual' nature but is not limited to that. For instance, adding new information on a certain topic can modify the pattern in which this topic was conceived, letting a new consciousness structure emerge.

Skill or know-how, unlike information, is embedded in individuals, as they are able to behave purposefully in a particular situation to achieve a certain result.

Explanation refers to scientific/professional knowledge. It is not person-based and can be found in articles, textbooks, and so on. Explanatory knowledge very often provides the basis for problem-solving competences.

Understanding is the most profound form of knowledge, arising when principles and connections are recognised. Understanding is thus embedded in individuals and is central to acquiring new knowledge.

Ways of acquiring knowledge

Each kind of knowledge is characterised by different channels through which learning takes place. The easiest cases are those of know-what and know-why. They can be obtained through typical ways of acquiring knowledge (reading books, attending courses, accessing databases), while the other two categories are rooted

primarily in practical experience and are more problematic, insofar as they require the availability of informal social channels. They are also types of knowledge upon which dynamic organisations depend, and companies are particularly interested in whether (new) employees are able and enabled to contribute to creating and developing such forms of knowledge ([3]).

Apprenticeship, alternance training and other forms of VET which involve on the job learning are important channels for acquiring **know-how knowledge**. They represent the most important way for skilling newcomers in an organisation. These protracted processes of learning by doing are frequently the responsibility of those considered the experts in an organisation, capable of above-average performance. Simulations are used as shortcuts for reproducing the many aspects of the know-how acquisition available in real situations. Know-who – as Lundvall and Johnson (1994) point out – is also socially embedded knowledge which cannot easily be transferred through formal channels of information. It is learned in social practice and through participation in particular networks (like those in professional communities which give participants access to information exchange with and between colleagues).

Tacit knowledge

Work-related knowledge is to some extent difficult to pin down for two reasons. First, it contains a tacit dimension and, second, it is bound up with particular social contexts: i.e., work-related knowledge is applied within particular practice communities, whose members develop ideas about how knowledge should be acquired, applied and shared.

The term 'tacit dimension of knowledge' was originally proposed by Michael Polanyi (1962). The basic idea is that 'we can know more than we can tell'. There is a level of knowledge that cannot always be put into words and linearly explained. In this dimension, in which the concepts of know-how, skill, competence, and expertise are rooted, knowledge is a practical and theoretical ensemble whose development and mastery take place through procedures which cannot be identified in linear terms. In fact, the results of cognitive processes are often obtained only by successive approximations. In many cases we acquire specific elements of knowledge that we possess, but may be unable to express, by focusing our attention on further elements and by obtaining feedback on what we have previously learned. The discovery (or acquisition) is facilitated by anticipation of the implications that are yet to be determined. In this way, knowledge accumulated in a cognitive system, although not expressed, makes up an implicit framework orienting the ways in which other elements subsequently enter the system. This is why individual skills are usually tacit. 'The aim of a skilful performance is achieved by observation of a set of rules which are not recognised as such by the person following them' (Polanyi 1962, p. 49).

The social nature of work-related knowledge has been underlined by drawing attention to the social context in which knowledge is acquired, developed and applied. The most relevant part of knowledge is seen as interpretation of experience, based on frameworks that at the same time favour and limit the individual process of making sense (Resnick, 1991). Situated cognition, the situation in which cognitive acts take place, is the driving idea behind this approach, recognising that individuals are very sensitive to their cultural context. The latter provides a complex fabric of references (exchange of information, cooperation, etc.) that in the long run shapes individual knowledge and determines **social construction of knowledge.**

Understood this way, the context creates a dynamic equilibrium between the know-what of theory and the know-how of practice. It is through the tight interdependence, or co-production, of theoretical and practical knowledge (Brown et al., 1989) that competences can be developed and maintained.

The social nature of work-related knowledge is also stressed in a cultural-anthropological perspective. For instance, Orr (1993), analysing the working behaviour of teams for repairing photocopiers, shows that technicians develop their knowledge over time through problem-solving and continuous interaction. The

([3]) In modern work organisations such informal social channels are less and less available. This underpins the need for a more formal transmission of knowledge and competencies and/or a systematic (LLL) opportunity for social and communication channels either inside or outside the company.

defects of the machines they have to cope with are often very different from the ones reported in the standard operational manuals, therefore problem-solving and problem-setting happen collectively on the basis of the previous experiences of each member of the group and various types of communication, even during informal chatting over coffee. This way, knowledge is continuously created and maintained within a specific practice community, having its own language and myths (partly through the handing down of 'war' stories, reporting the main events of repairing machinery and dealing with clients).

Recently, ideas about the application of tacit knowledge in particular social contexts have been developed further in considering moves to form 'knowledge-creating companies' (Nonaka and Takeuchi, 1995). The model is based on the assumption that knowledge in organisations, especially in the most innovative enterprises, is created through interaction between tacit and explicit knowledge, continuously 'converting' one into the other. The model postulates four different modes of knowledge conversion: socialisation (from tacit knowledge to tacit knowledge), externalisation (from tacit knowledge to explicit knowledge), combination (from explicit knowledge to explicit knowledge), and internalisation (from explicit knowledge to tacit knowledge).

Socialisation is a process of sharing experiences and thereby creating tacit knowledge, such as shared mental models of the application of skills. This occurs in the particular case of on-the-job learning during apprenticeships, in which tacit knowledge directly derives from the master/trainer – not through language but through observation, imitation, and practice – and is then converted into the tacit knowledge of the apprentice. It is a process which cannot be abstracted from associated emotions and from the specific contexts in which shared experiences are embedded. Externalisation is a process of articulating tacit knowledge into explicit concepts. It is generally based on metaphors, analogies, hypotheses, images or models from which new ideas and products can be generated through interaction between individuals who want to reach the same outcome.

Combination is a process of systematising concepts into a knowledge system by combining different bodies of explicit knowledge. The media for this purpose can be very different (documents, meetings, telephone conversations, computerised databases, and so on). Reconfiguration of existing information through sorting, adding, combining, and categorising explicit knowledge can lead to new knowledge. Internalisation is the process of embodying explicit knowledge in tacit knowledge. It is closely related to learning by doing: the sum of experiences gained by individuals through socialisation, externalisation, and combination can become individuals' tacit knowledge base in the form of shared mental models or technical know-how. But internalisation can also be reached through other forms. For instance, reading or listening to success stories can induce new levels of tacit knowledge in members of the same organisation and establish new shared mental models within the organisational culture.

The knowledge spiral

The four modes of knowledge conversion are structurally interconnected. Different events in organisational life can be viewed from a perspective of incorporating each of these modes into the processes of knowledge creation. Of course, an organisation cannot generate knowledge by itself but can only mobilise tacit knowledge created and accumulated by employees at individual level. Tacit knowledge of individuals is the basis of organisational knowledge creation, 'organisationally' amplified through the four modes of knowledge conversion. Nonaka and Takeuchi (1995) define this process as the 'knowledge spiral' in which the scale of interaction between tacit and explicit knowledge will grow as the relationships between the four modes are continuously increased and managed.

In this perspective, organisational knowledge creation, which could be considered a subtler way of viewing organisational learning, is a spiral process which starts at the individual level and moves up through expanding 'communities of interaction' and crosses sectional, departmental, divisional, and organisational boundaries within and beyond the organisation.

Overall, work-related knowledge appears to be a very complex and multifaceted issue, involving several different and sometimes contradictory dimensions, which can be synthesised in the kinds of relationship between explicit and tacit knowledge. Organisations with business processes highly dependent upon the continuing development of work-related knowledge are therefore particularly interested in whether new recruits and their employees will be able to make substantial contributions to the creation, transmission and diffusion of work-related knowledge. This perspective has clear implications for the relationships and interactions between initial education, school and work, continuing vocational training and lifelong learning.

New approaches to acquiring competences, skills and knowledge

The changing social and economic environments are currently challenging vocational education and training planners and policymakers. The changing nature of highly industrialised and technology intensive economies is placing new demands on knowledge creation and innovation. We have examined how such knowledge may be created. We have highlighted the relationship between competences, skills and knowledge, and their interplay in (lifelong) learning, knowledge development and innovation above. Below we examine the processes which underpin skill acquisition.

Two prerequisites for (lifelong) learning

One of the major challenges for VET which derives from our analysis of the social and economic challenges and of new knowledge requirements is how to support those undertaking VET programmes in such a way that participants can not only perform more effectively in their existing jobs, but are also better equipped to handle or master changes. The trend has been to develop flexibility in trainees and workers so that they are able to cope with change and are better prepared for what they may be required to do in the future, rather than simply training them for existing jobs. These concerns relate both to initial education and training and to continuing vocational education and training.

Discussion of the interaction between changing initial vocational education and training patterns designed to facilitate learning and changing business processes indicates that there are two essential developmental tasks young entrants have to be able to perform if they are to function effectively in dynamic companies operating in new knowledge-intensive environments.

First, they need to be able to transfer what they have learned in other contexts to their new working environment.

Second, they need to engage in knowledge development within and on behalf of their companies.

Both these processes warrant further investigation as neither process is unproblematic. The issues of transferability and knowledge development and the implications of supporting the development of these within work and initial and continuing vocational education and training are central questions for the future development of vocational education and training in Europe.

Promotion of transferability

The growing complexity of many jobs is putting a premium on the ability to transfer knowledge and skills to different situations. Research highlights the importance of learners developing mental maps (Soden 1993), so they can organise what they have learned, with the increased possibility that they could then apply this elsewhere. However, transfer tends to be highly specific and needs to be guided: it rarely occurs spontaneously. Perkins and Salomon (1989) argue that transfer is possible, depending on how knowledge and skills have been learned and how the individual deals with that knowledge in different contexts, and that two conditions are generally required for transfer to take place: context-specific knowledge and general skills have to be brought together and the learning approach must actively seek ways to encourage transfer.

If one intention of a learning programme is to help learners develop the ability to transfer skills, knowledge and understanding, then learning contexts are required which draw attention to the significance of skill transfer. For example, this could involve actively helping people to look for opportunities to transfer skills, knowledge and experience and giving them opportunities to practise making successful transfers (Blagg et al., 1992). Exposure to a range of contexts can then be valuable by both enhancing a skill and leading to more complete mastery of it (Hayes et al., 1983) and because it allows learners to make connections (and think about transfer) between contexts (FEU, 1984). Pea (1987) argues it is necessary to promote a transfer culture, and this would involve organising an effective climate directed at transfer. Hence attempts should be made to link transfer closely to learner motivation and commitment. The whole thrust of this approach is that it encourages learners in particular, but also trainers and tutors, to analyse contexts for increasing the possibilities of skill transfer.

Hayes (1992) and Achtenhagen (1994) highlight the potential for simulations or extended project work to integrate a number of strands of learning and to seek to promote the ability to transfer from that basis. The requirement that learners integrate a broad range of experiences, besides having the capacity to develop the ability to transfer, can itself also help the development of learners' critical thinking and conceptual skills (Winter et al., 1981). This does, however, depend upon learners being given opportunities for reflection to broaden the general nature of skills and knowledge learned (Hammond and Collins, 1991). Similarly, in a recent case study in Finland, Anti Kauppi pointed to the value of broad-based learning tasks which 'guide the students towards acquiring the essential concepts and knowledge structures as well as examining the models of thinking and acting in working life' (Kauppi, 1998, p. 81).

In a recent document on the need to promote transferability in learning programmes, Oates (1998) emphasises the value of developing learner adaptability to encompass 'the transformation of existing skills and knowledge in order to perform effectively in unfamiliar tasks' (Oates, 1998, p. 1). Note that what Oates terms adaptability could be broadly regarded as what is termed transferability in the context of European debates on these issues (Nijhof and Streumer, 1994). Oates also highlights how problem-solving approaches in mathematics have yielded enhanced performance in the application of skills by stimulating enquiry in unfamiliar settings (Boaler, 1996). Medical training is also quoted as an area which has been effective in securing skill transfer. Although Oates refers to evidence of skill transfer in medical training from the USA and New Zealand (Newble and Clarke, 1986), problem-solving approaches are now almost universal in the early stages of medical training in the UK. These have had marked effects on motivation and resulted in significant reductions in drop-out compared to the more traditional approaches previously used. These approaches also utilise careful sequencing of theory and practice, a focus on learning styles and deliberate use of a wide range of learning styles and modes (Newble and Clarke, 1986).

Oates goes on to argue that although 'the precise details of the models vary … they share a common theory-driven pedagogy, focusing on principles of fostering autonomous redeployment of skills, through learning programmes where difference in context is managed carefully as a key aspect of the learning programme … the crucial component therefore seems to be the following: pedagogy and programme management driven by a coherent model of skill transfer, not the simple implementation of a list of key skills' (Oates, 1998, p. 24).

Learning to learn

There is almost universal recognition of the value of learners learning to learn (Novak and Gowin, 1984), and this can form a basis for continuing learning in the workplace. Consequently, getting learners to learn to learn is often cited as an aim in initial vocational education and training programmes. However, this does not ensure the issue will be addressed in practice (Evans et al., 1987). This is because of the historic problem associated with many education and training pro-

grammes which instead focus on tasks that are easier to teach and/or assess (Sockett, 1980). Conversely, the development of more general skills, including learning to learn, which underpin much activity in education, training and employment, can be seen as the responsibility of everyone, and hence of no one in particular in practice.

'Learning to learn' can be linked to the inculcation of habits such as **systematic observation, analysis and a questioning attitude** (Annett and Sparrow, 1985). This is important especially if learners are to take advantage of opportunities for learning outside formal education and training settings. This is related to the need not only to embed the development of learning strategies within an occupational context, but also to contextualise the application of learning strategies. People need to learn how to apply effective learning strategies in a variety of contexts, particularly if they are likely at some stage to be in contexts which impose considerable demands to learn while working.

Reflection learning

There is a need to create and sustain a culture within organisations which values learning and development, and reflection can be an important process to help achieve this (Brown and Evans, 1994). Individuals with an ability to transfer what they have learned between contexts will need to reflect on both their own practice and their own learning. Attempts should be made within VET to ensure learners reflect on their working practices: ideally so what is learned from reflection on practice can influence action, thereby leading to improvements and further learning (Winter, 1991). While the need for any learning programme to seek to develop reflection among learners should be readily apparent, emphasis on reflection can also draw attention away from concerns with acquiring a fixed body of knowledge or a set of immutable competences: practice itself should always be seen to be developing.

It will therefore be necessary for individuals to continue to build and refine their own base of knowledge and understanding through reflection on practice, building a spiral of action and appreciation, leading to reflection-in-action (Schön, 1983). Critical reflection on experience is seen as a motor for learning at work (Kolb, 1984; Schön, 1987). The staged model of skill acquisition of Dreyfus and Dreyfus (1980) identifies the key to successful progression through to the expert stage as the processes of review and critical reflection. Critical reflection then is widely recognised as pivotal (Hammond and Collins, 1991; Tomlinson and Kilner, 1991) to developing expertise.

Developing thinking skills

Just as policy-makers have been acknowledging the importance of developing learning-to-learn skills in learners, increasing interest has been expressed in the further development of thinking and problem-solving skills. Blagg et al. (1993) conclude from a fairly comprehensive review of the evidence that enhancing thinking skills can have positive transfer effects. Collins et al. (1989) put forward the notion of a cognitive apprenticeship, where explicit attention is devoted to the development of cognitive skills. It emphasises modelling approaches to thinking while tackling problems within a domain on demonstrations coupled with coaching, offering hints and regular feedback within situations where learners tackle problems themselves.

Collins et al. also highlight the importance of learners making their thought processes explicit, including through the use of articulation, whereby learners articulate the knowledge, reasoning or problem-solving processes they are using. The sharing of ideas about thought processes can be a valuable means of learning for both learner and coach (Brown et al., 1994). However, such sharing can also be valuable in group settings, where learners can access, develop, organise and become aware of their own and others' knowledge and approaches to problems (Prawat, 1989).

Soden argues that there is particular value in teaching and making explicit the thinking that occurs during problem-solving in occupational contexts, as 'good problem solvers have internal representations of fundamental principles relevant to their occupational area and these representations are connected to each other and to

broader relevant knowledge in ways which facilitate application to problems' (Soden, 1993, p. 12).

Rissland (1985) believes it is therefore essential for tutors to create a framework that can help learners organise their learning in the domain in which they are working. Learners need to develop schemas to organise what they are learning, particularly if training is exploration-based, not least to enable the transfer of what they have learned (Hesketh et al., 1989). One important aim for developing expertise should be to get learners to build integrated knowledge representations (Landa, 1984). Teaching should then 'have a dual focus – the development of thinking skills as well as the achievement of targeted competence' (Soden, 1993, p. 3).

Soden also signals the usefulness of getting students to engage in concept mapping. This is compatible with earlier research (Schmeck, 1988) showing that those with a deep learning style were likely to organise ideas into networks, which linked different concepts. Soden was also involved in a project to encourage tutors to teach thinking skills to groups of learners taking vocational modules in Scottish initial vocational education and training programmes. The work demonstrated the potential of the approach and that learners' problem-solving performance could be enhanced.

Learners, therefore, do not only need to learn efficient mental processes, but also when and how to use them in practice. There is, therefore, an emerging consensus on the value of teaching thinking skills to improve problem-solving performance in particular contexts. This teaching, however, should be embedded in and directly linked to solving problems that occur in a particular occupational/situational context. Learners should also be encouraged to articulate their thinking processes and be given opportunities to practise using and reflecting on the relational networks they are developing.

Development of learner independence

The above examples reinforce the fact that, while greater learner independence might be increasingly required as an outcome of programmes designed to promote transferability (BT, 1993), it may be necessary to pay attention to developing learners' thinking and learning skills if they are to become independent and autonomous learners. In view of this, however, great benefit can be gained from learners being more in control of their own learning (Long, 1990).

A study of training for skill ownership (Hayes et al., 1983) in England and Wales advocated setting up learning programmes which made maximum use of trainees learning how to 'find out'. They highlighted the need for skill mastery to be reoriented from the organisation to individuals. Companies too have been paying attention to the need to develop learner independence within programmes of work-based learning. One role of trainers is to ensure there are opportunities for reflection within such programmes so that individuals become more effective at acquiring self-learning methods and individual development techniques (Infelise, 1994).

Teamwork and collaborative learning

Changing skill mixes and the development of multiskilled or interdisciplinary teams require skilled workers to work more intensively with others. Hence ability to operate as a member of a team is becoming increasingly important at work, and the support of others at work can frequently be instrumental in individuals' learning. Infelise highlighted how large companies in France, Germany, Britain and Italy made use of group-based project work, action learning and learning while working in organised work-based learning programmes. There are increasing numbers of examples where these teams became a focus of support for learning because learners were working in teams in the workplace (Infelise, 1994; Dankbaar, 1995).

Knasel and Meed (1994) suggest that the value of teams in their support and encouragement of learners relates to how:

- ❏ they provide opportunities for people to share their skills and experience;
- ❏ they provide a forum for exchanging information and generating ideas.

Within a supportive team people would more readily give each other advice, guidance and feedback in an unthreatening manner.

Above all a team – with its defined membership, shared sense of purpose, group consciousness and interdependence – can offer the kind of enjoyable, rewarding environment in which learning is more likely to happen (p. 45).

The extent to which this is feasible depends either on work structure in the workplace (Pettigrew et al., 1990; Keep and Mayhew, 1994) or on a readiness to set up activities for learners to learn and work as a group. Encouragement of cooperative learning can be seen as an important strategy for tutors or mentors to adopt. And it is important that learners learn to value collaborative learning and working relationships and recognise the value of the experience of others. Sanches (1992) points to how group-based problem-solving helps learners develop reflective thinking skills and their capacity for self-regulation, as well as increasing the likelihood that they will incorporate and transfer what they have learned.

The value of group projects in developing the skills of working with others has been demonstrated in several contexts (FEU, 1985; Boud et al., 1991), but the problem is that time for group reflection may be seen as 'soft' and be sacrificed or severely curtailed in the face of more pressing demands. Soden (1993) highlights that the most effective way of 'remedying thinking errors is to discuss them with someone else' (p. 18). Miyake (1986) also showed that during collaborative problem-solving, individuals were more likely to monitor their own thinking processes. Opportunities for working with others should be built into all learning programmes but, where relatively little working and learning with others occurs at work, it may be that use of action plans, developing of individual training projects and learning contracts can emphasise supporting opportunities for working with others in different contexts.

The social context created by a cooperative approach can also enhance the motivation and commitment of learners (Slavin, 1983). Blagg et al. (1994) see guided group work as invaluable not only for developing teamwork skills, but also as 'an important means of extending learning and understanding. Effective groups provide a cognitive scaffold for others to climb and build on. Ideas, tactics and solutions evolve in an iterative way, enabling individuals to see possibilities which would otherwise have been unavailable to them' (p. 9). In this way collaborative learning can not only help individuals to transfer their skills, knowledge and understanding between contexts, but also expose individuals to different strategies for making these connections.

Integration of knowledge development with work-related activities: towards effective work-based learning

What we now require are more imaginative ways of integrating knowledge acquisition, problem-solving and key skill development in work-related activities which are relevant to the workplace and meaningful for the learner. Achtenhagen (1994) and Hayes (1992) argue strongly that extended 'company' simulations can deliver such integration. Such simulations would have the potential to help learners engage in broader 'systems thinking'. Kauppi (1998) proposes 'ventures' as essential elements in integrating work and learning. 'Ventures' or projects, developed jointly between students and employers, provide a 'holistic and organised grasp of the work as well a new way of thinking and acting in relation to work' (p. 82). In this respect, there would appear to be stronger alignments with the development of problem-based learning (Boud and Feletti, 1991): it is learner-centred with the integration of subjects and skills into thematic blocks, coupled with the use of learning-oriented work in small groups and with self-directed learning. Such methods would also be compatible with assessment processes that test knowledge generated from analysis of practice (Atkins et al., 1993). Such an approach consequently needs to be aligned with practical and active work-based learning, concerned with current and future performance in a holistic concept for developing

competence and expertise. This in turn will require a more integrated and imaginative concern for learning and assessment in companies and work organisations, drawing on group or project work and problem-based learning.

We have emphasised the need to design learning programmes to develop transferability. Such programmes can take place in a variety of contexts, so it is worth examining what types and combinations of learning context contribute to making work-based learning effective. One key decision will be the location of and balance between development of more specialised expertise and broader vocationally oriented knowledge.

Nieuwenhuis (1991) argues that a single 'best' context does not exist, because effective training can make use of a variety of contexts. Instead it may be more appropriate to audit the learning opportunities available and the advantages and disadvantages associated with particular combinations of education, training, employment and community contexts. Knasel and Meed (1994) argue along similar lines: guidance should be given to practitioners to allow them 'to make informed decisions about the relative strengths and limitations of off-the-job, near-the-job and on-the-job experiences in relation to specific areas of learning and aspects of the learning process' (p. iii). It is also important to monitor what happens in practice, as 'work-based learning has the capacity to deliver an exceptionally challenging and rewarding learning environment. However, it can also produce sterility, where challenges are few and a series of mundane experiences lead to little learning' (Brown, 1992, p. 134).

There are obvious difficulties for some small companies in providing the full range of learning opportunities required for developing a broad occupational competence. Training practitioners interviewed for a study undertaken in the UK strongly believed that organisational culture itself could be influential, whereby 'the *wrong* organisational culture would significantly inhibit effective learning' (Knasel and Meed, 1994, p. 17). In contrast, in an organisation with a long-standing commitment to learning, it may appear natural for workers to learn with the company (Brown and Evans, 1994). Pettigrew et al. (1988) saw the existence of receptive or non-receptive training contexts as influencing the whole approach companies adopted in the development and management of their human resources.

While some small companies are reluctant to get involved in training and development, other relatively small or medium-sized enterprises are highly innovative, particularly if linked to 'multifirm networking processes' (Rothwell, 1993). They can offer very rich learning environments. The GOLO model project in Wilhelmshaven in north Germany has brought together networks of enterprises which collectively offer a broad range of learning opportunities for apprentices (Rauner, 1998). In such circumstances, work itself (and the survival of the company) is concerned 'with extending levels of organisational adaptability and flexibility and with developing new areas of knowledge and technological competence' (Rhodes and Wield, 1994, p. 168). The richness of the work/learning environment is such that knowledge and expertise rapidly develop through work, which itself occurs in different contexts. In such circumstances emphasis is given to the possession of: 'a broad mix of skills ... required to achieve viable levels of flexibility in the development and delivery of products and services, and to sustain viable inter-firm networks' (ibid., p. 169).

It is interesting to note the considerable expectations which growing companies in central London, UK, had of new employees being able to learn while working from the outset. In a survey of 950 small and medium-sized companies in central London, Rajan et al. (1997) point out that growing companies were likely to be moving towards a performance-driven business culture, with an emphasis upon empowerment, teamwork, lifelong learning and individuals managing their own careers. Graduates were 'reckoned to have intellectual and behavioural traits more in tune with the main elements of the new culture' (Rajan et al., 1997, p. 13), and as a consequence 'the growing companies in our sample have been recruiting a significant number of graduates in recent years in nearly three out of every five companies in our sample, more than 20 %

of the workforce have graduate qualifications' (Rajan et al., 1997, p. 13). The training methods most frequently used with new graduate recruits were learning by doing, coaching by line managers, interacting with suppliers and customers and carrying out significant work responsibilities.

Employers following this path could be regarded as developing the additional qualifications individuals need, even to a level above that of the 'skilled worker', even though these qualifications may not be formally recognised. These developments may be placed primarily within the 'organisational' space of company activities rather than within the formal 'qualificational' space, although there may be some variation depending on the different approaches adopted by each of the respective individuals, companies or sectors. Indeed, the employment of inexperienced, 'overqualified' young people (for example, graduates without appropriate specialist knowledge) could mean that they are overqualified educationally in relation to the specific job requirements, but simultaneously underqualified in their experience (Tessaring, 1998).

Conclusions

The four most important key messages are formulated below as conclusions:

❏ change of focus from education and training to learning;

❏ development of increasing learner independence;

❏ new learning environments and contexts which may combine learning and working;

❏ individual learners' participation in knowledge transfer, and both organisational and broader competence development.

A focus on learning

One key message for those charged with designing effective learning programmes is that the prime focus of the interrelationship between education, training and employment needs to be on learning. It will be important to address issues of learner motivation and seek to ensure learners are given opportunities to improve their learning-to-learn skills and that a sufficient range and quality of learning opportunities are available to develop their key or core skills and competences. In particular, if the intention of a learning programme is to help learners develop the ability to transfer skills, knowledge and understanding, then learning contexts are required which draw attention to the significance of skill transfer. Processes of review and critical reflection are pivotal for this. Organised reflection on what has been learned and what needs to be learned in the future can act as a bridge between working and learning, and as a bridge between the skills that are currently required and those that may be needed in future. Such reflective processes are linked to the development of more elaborate thinking processes that underpin the ability to transfer knowledge, skills and understanding.

More generally, learners should be encouraged to make their thinking approaches explicit, through discussion with tutors, coaches or peers. These discussions should examine their approach to tackling problems in their occupational area and the extent to which learners are developing networks or schemas in order to advance their understanding of concepts and relationships in their respective contexts and in the environment as a whole.

Learner independence

Developing learner independence is also an important goal, as learners need to take increasing responsibility for their own continuing learning across a range of settings. Similarly, being able to learn and work in teams has become more significant in various contexts. Learning programmes should thus provide opportunities to develop these skills. One might think that focusing on the process skills underpinning the ability to be effective in different contexts might result in downplaying the development of a substantive occupational knowledge base. However, this is not the case. Rather, developing process skills should ideally be embedded in appropriate occupational

contexts. Further, developing a substantive knowledge base is important because it is central to developing domain-specific expertise and forms a platform for continuing learning in the future. We should remember that the ability to master a substantive knowledge base is itself a process skill, which should be valuable in various learning and working contexts, especially in those where organisations require individuals to contribute to processes of knowledge creation, development, transmission and diffusion or adaptation, thus enabling their participation as 'independent learners' in work-related communication and skill transfer.

Learning contexts

The design of effective learning programmes to develop competences, knowledge and skills needs to draw upon a variety of learning contexts. Designers need to be aware of the strengths and weaknesses associated with particular combinations of education, training and employment contexts. The quality of learning environments in companies can be quite variable, as organisational cultures can either inhibit or promote effective learning. Similarly, patterns of work may be organised in such a way that practice and expertise can be developed further through a productive combination of working and learning for both young people and the adult workforce. To make optimal use of less favourable learning environments at work, it may be necessary to launch or simulate special work-based projects, to promote individual learning contracts or projects and to establish joint action plans between trainers/tutors and learners to enhance and enrich work-based learning and to make it applicable to contexts beyond the immediate work environment.

Concluding remarks

Those designing learning programmes in vocational education and training should pay particular and increased attention to promoting skills and competences so that learners are readily able to incorporate and transfer what they have learned into and between a whole range of different contexts. Individuals should be equipped to contribute to processes of individual and organisational knowledge development and utilisation in companies which, if dynamic, are increasingly offering working environments with considerable opportunities for learning while working.

These working and learning environments would include development of learners' ability to:

- ❏ transfer what they have learned between contexts; to strengthen their own knowledge;
- ❏ contribute to other's permanent knowledge creation and development;
- ❏ engage in processes of organisational knowledge and competence development.

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Training and flexible work organisation in the European metal industry - Spain, France, Italy and Portugal

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This article was written to publicise the results of the Leonardo project entitled '*FLEXIFORM - Identifying future training needs resulting from flexible work organisation in firms in the metal industry'*. The conclusions drawn are based on an analysis of data obtained from 175 firms located in four regions of Spain, France, Italy and Portugal.

While economic and industrial factors have forced the metal industry to make its operations more flexible, both young people entering the labour market and workers already in employment lack the appropriate specific and general skills needed to cope with this organisational revolution.

Methods of initial and continuing training that are able to make good these shortcomings therefore urgently need to be devised if the future of this sector and that of its employees is to be assured.

Summary

The project entitled 'Identifying future training needs resulting from flexible work organisation in firms in the metal industry' and conducted under the EU's Leonardo da Vinci programme is concerned with enhancing the adaptability of human resources in the metal industry when faced with flexible work organisation. The project was carried out in Spain (Catalonia), France, Italy (Emilia-Romagna) and Portugal under the direction of the Centro de Estudios y Asesoramiento Metalúrgico (CEAM) in Spain, Union des Industries Métallurgiques et Minières (UIMM) in France, Centro Servizi per l'Automazione Industriale (DEMOCENTER) in Italy and Associação Nacional das Empresas Metalúrgicas e Electromecânicas (ANEMM) in Portugal.

The geographical areas covered by the project constitute between 21% and 22% of the territory, population and GDP of the European Union. In these regions the metal industry - the term is used here to cover the production of metals, mechanical engineering and the manufacture of electrical and electronic components - has a total labour force of 2.4 million employed in 100 000 firms.

In the current economic and industrial climate work organisation emerges as an aspect of management requiring greatest attention, since human resources are now a key element in competitiveness. Work organisation is in a phase of transition, moving away from the rigid hierarchical structure of traditional systems of mass production and embracing a horizontal structure that is constantly changing. The abandonment of the traditional relationship between man and machine which this process involves is a tentative response to changes in the market and more demanding customer requirements.

There is not just one but several models for flexible work organisation, the procedures most frequently adopted being adjusting working hours to match production, the use of temporary employment contracts, part-time working, job rotation, the creation of production cells, team working and outsourcing.

At present a number of firms in the metal industry in the regions studied have opted for a system of flexible work organisation for the shop floor, even if they are not always aware of the fact. Generally the changes involve traditional means of flexibilising operations such as varying working hours and making its easier to hire and fire, without embracing a corporate culture more in line with the modern concept of flexibility as a new way of organising and managing a firm and its human resources.

The metal industry in the countries studied is currently in transition: traditional forms of work organisation are gradually giving way to more modern, flexible regimes. The tools most frequently used to achieve this flexibility are conventional ones, such as making use of temporary employment contracts, while others more in line with the new philosophy, such as production cells and team working, are still rarely used.

For firms in the metal industry introducing flexible working methods brings with it radical changes in strategy, management of human resources, the workforce and internal structure and organisation. It also calls for a redefining of job profiles with a greater emphasis on knowledge, technical experience, aptitudes, personal skills and individual and group abilities in line with the new system. Middle managers play an essential role in industrial firms as vital links in the operation and smooth functioning of a flexible working system.

Most of the firms approached by the project expressed the opinion that workforces suffered from a serious lack of skills that hampered the introduction of flexible working. This was said to apply particularly to more recent recruits. Most firms also considered that the present education system failed satisfactorily to meet the training needs of those involved in flexible working. Criticism was levelled principally at initial vocational training and training provided for the unemployed.

People at all levels will have to adjust to a new regime of working in the sense of acquiring and combining knowledge, experience, skills, abilities and aptitudes. A 'modern flexibility culture' will have to be nurtured with the accent on new technical approaches, individual and group mentality, and company and team organisation. Flexible work organisation calls for a new type of worker characterised by a versatility and multiskilling that presupposes a fund of technical, methodological and inter-personal know-how, adaptability and willingness to learn and to become integrated as a responsible member of the firm, personal qualities contributing to good group relationships, and a familiarity with information and communication systems. Training must concentrate on providing initial training for the workers of tomorrow and continuing training aimed at updating active workers' skills.

Introduction and method

The intention underlying the EU's Leonardo project entitled 'Identifying future training needs resulting from flexible work organisation in firms in the metal industry' (call for proposals 1998) was to contribute to enhancing the adaptability of human resources in the metal industry – the term used here to cover production and preliminary processing of metals, machine construction and the manufacture of electrical and electronic components – when faced with the need for flexibility in a new form of work organisation, particularly as regards knowledge, skills and attitudes. The adoption of flexible work organisation is vitally important if industry in general and the metal industry in particular are to remain competitive in the global market. Flexible working has come to be accepted as an innovation promoting future competitiveness. Hence the number of firms in the metal industry and elsewhere currently seeking to achieve this flexibility (cf. the European Commission's 1997 Green paper 'Partnership for a new organisation of work' (COM (97), 128 final). However, for the time being the training given to human resources and their qualifications and skills are still designed to meet outdated organisational requirements, a fact which constitutes one of the main obstacles to progress towards new forms of flexible work organisation by European firms.

The objectives of the project were as follows:

- ❏ to analyse the changes brought about by and to be expected from flexible work organisation in companies in the metal industry;
- ❏ to identify future job profiles and qualifications for production jobs in the metal industry linked to flexible working, particularly jobs calling for multiskilling;
- ❏ to put forward outline proposals for training to improve the know-how of per-

sonnel responsible for implementing flexible working in firms in the metal industry;

❑ to disseminate the project results and outline proposals among interested circles and others connected with the metal industry.

The project took place between 1999 and 2000 in the Catalonia region of Spain, in France, the Emilia-Romagna region of Italy, and Portugal. It was directed by the Spanish centre of studies and advisory services for the metal industry (Centro de Estudios y Asesoramiento Metalúrgico - CEAM) with the assistance of Euro Industries Programmes, which comes under the Union des Industries Métallurgiques et Minières (UIMM) in France, the Centro Servizi per la Diffusione dell'Automazione Industriale (DEMOCENTER) in Italy, and the Associação Nacional das Empresas Metalúrgicas e Electromecânicas (ANEMM) in Portugal.

The method used involved:

❑ gathering and analysing existing information and documentation (books, articles, reports, statistics etc.);

❑ conducting a survey among firms in the metal industry. In Spain, Italy and Portugal a questionnaire sent out to enterprises for this purpose brought 131 responses. In France researchers studied the information relating to 44 firms contained in an existing database;

❑ analysing the experience of certain enterprises. In all 33 in-depth personal interviews were conducted to obtain information on specific cases.

1. Brief survey of each country/region

The countries and regions taking part in the project - Catalonia, France, Emilia-Romagna and Portugal - together cover an area of 696 000 km^2 and have a population of some 80 million, equivalent to 21.5% of the area of Europe and 21.7% of its population.

With a GDP in excess of EUR 990 000 million (22% of that of the European Union as a whole) they have a workforce of nearly 32 million, again equivalent to about 22% of the active population of the EU.

Their economies are structurally similar. The tertiary sector predominates, representing over 60% of GDP, but there is also a considerable amount of industrial activity with a strong secondary sector, particularly in Emilia-Romagna, France and Catalonia.

2. Description of the metal industry (including electrical and electronic component production)

In each of the areas looked at in the project the metal industry represents one of the chief activities in quantitative terms, as well as by virtue of its links with other sectors. It is particularly important in France and Emilia-Romagna with a total of 2 400 000 people employed in some 100 000 industrial firms. Activities include production and preliminary treatment of metals, production of metal components and machine construction, which together account for 70% to 80% of output.

The specialist focus of the four geographical regions differs.

In Catalonia the chief areas of activity are, in order of importance, transport vehicles, the production of metal components, machine construction, and the manufacture of electrical and electronics components. Engineering accounts for 80% of the sector's total output.

In France the principal activities are production of metal components, machine construction, manufacture of electrical and electronic components and transport vehicles. Engineering accounts for three-quarters of the sector's workforce.

Emilia-Romagna concentrates heavily on machine construction and transport vehicles.

In Portugal production of metal components well outstrips machine and vehicle construction. Engineering generates about 73% of the added value of the metal industry.

In all four regions sectoral activity is largely in the hands of small and medium-sized enterprises. However, certain activities, such as automobile production in Catalonia, Emilia-Romagna and Portugal or aircraft production and the electronics industry in France, are the province of large firms.

3. Flexible working in engineering firms

3.1. What is flexible work organisation?

In the industrialised countries engineering firms are currently in the throes of more radical changes than other branches of industry. These changes involve:

❑ continuing rapid technological progress, particularly in information, communications and digital technology;

❑ the globalisation of markets, production and commercial outreach;

❑ a growing diversity of demand with changing, more stringent requirements;

❑ constant efforts to evolve new forms of organisation and management methods;

❑ a steady upgrading of workforce skills.

All these changes oblige firms to seek ways and means of underpinning their position and enhancing their competitiveness on all fronts. A sustained ability to cope with change, a networked organisation rather than a pyramid structure, more flexible intra-hierarchical relation, cooperation and partnership and an increasing use of outsourcing are just a few of the new economic realities.

In this context work organisation becomes one of the aspects of corporate management requiring most urgent attention, given that human resources have become a key factor influencing competitiveness. The idea that a firm's sustained growth is determined by its ability to reorganise its operations and review the principles on which pay, working conditions, training and employee commitment are based is visibly gaining ground.

We are currently witnessing a transformation of work organisation [1] involving the gradual disappearance of rigid hierarchical structures based on the performance of highly specialised and often repetitive tasks typical of traditional systems of mass production, and their replacement by a horizontal structure in constant evolution founded on information and know-how, adaptability, worker involvement and the autonomy characteristic of modern production systems.

Flexible organisation originated with the automation of production processes and the disappearance of the traditional man-machine relationship. It is industry's response to the growing volatility and dynamism of markets dynamism and the increasingly stringent demands of clients. In this respect a distinction must be made between quantitative flexibility, in the sense of satisfying a demand that is either expanding or shrinking, and qualitative flexibility, which involves tracking demand in its essence. Flexible work organisation may also be considered as one of the elements of what is termed the 'flexible company', typified by the flexibility of plant and production teams, flows of merchandise, information and product distribution. The aim of this flexibility is to improve firms' productivity, the quality of production, their capacity for innovation and, in the end, to boost their profits. In industry flexibility implies the growing integration of techniques, methods, and services of a general nature (quality, maintenance, logistics etc.).

There is not just one but several models of flexible work organisation. In fact, each firm adopts the model which best serves its circumstances, since the current changes do not affect all in the same way. However, certain forms of flexible working are now being used by industrial firms to reorganise their production workforces.

❑ Adjusting working hours to the firm's production needs, applying systems such as flexitime or a system of credits whereby workers take hours off when not required and work extra when the need arises.

❑ Using temporary contracts of employment as the law allows.

❑ Job rotation.

[1] Green paper on partnership for a new organisation of work. European Commission. Luxembourg: Office of Official Publications of the European Comunities, 1997. (COM (97) 128 final).

❑ Setting up production cells and creating teams to work on particular projects.

❑ Outsourcing segments of production.

Some of these methods - such as adjusting working hours to production needs, temporary employment contracts and outsourcing - accord with traditional concepts of flexible working. Others, such as part-time working, job rotation, production cells and team working, are more recent concepts.

The different modes of flexible working can also be classified according to the type of flexible organisation [2] to which they relate. Job rotation, production cells and team working are aspects of operational flexibility, which expresses the ability of workers to perform a wide range of tasks and fulfil a variety of functions, whereas adjusting working hours, temporary employment contracts, part-time working and outsourcing make for numerical flexibility whereby firms can vary workforce size to suit their needs at any given time [3] .

3.2 Implementing flexible work organisation

Many firms in the metal industry in the regions studied have introduced some form of flexible work organisation [4], even though they are not always aware of the fact. Where they have done so, it has generally been by using traditional methods - adjusting working hours and times and liberalisation measures to permit easier and cheaper hiring and firing - with no attempt to create a new corporate culture based on the modern holistic view of flexibility as a new way of organising and running a company. In the same way, most firms introducing flexible working have done so without any preliminary planning or formulation of strategic objectives. This applies particularly to smaller firms; large firms rendering their operations more flexible tend to do so with a definite strategy in mind. The degree of organisational flexibility is, moreover, closely bound up with the firm's type of activity and labour legislation in the country concerned.

A study of the type of flexible working chosen by firms and how well established it is shows that engineering firms in the project countries are still in a process of transition towards more modern and flexible modes of working, Consequently, they are still liable to resort more to traditional means such as temporary employment contracts and less to the more modern methods deriving from a philosophy of flexibility, such as production cells or team working. Even so, it is interesting that companies which have not yet moved in the direction of flexible working say that they plan to do so sooner or later. France and Emilia-Romagna have progressed furthest along this road, followed by Catalonia and with Portugal well behind.

Temporary employment is one form of flexible work organisation frequently adopted by engineering firms, particularly in Catalonia: the survey carried out as part of the project showed that 88% of firms in the sector there use temporary employment contracts. Portugal presents a different picture: here only 53% of firms use fixed-term contracts but they cover almost 20% of the active labour force. The number of fixed-term contracts varies with the size of the firm concerned.

Outsourcing certain segments of production is another form of flexible working found in a great many firms in the metal industry in the four areas studied. Emilia-Romagna makes the greatest use of outsourcing, which represents 26% of output, followed by France, Catalonia and Portugal. Here again the degree of outsourcing varies with the size of the firm; almost all large firms outsource their production to some extent.

Job rotation is the third form of flexibility. This is particularly noticeable in small firms, regardless of location, though also found in medium-sized and larger firms. Most employees in smaller firms are capable of performing a variety of tasks, which helps to compensate for structural limits such as lack of personnel.

The fourth type of flexible working adopted by more than half the firms in the sector studied is adjusting working time to meet production needs. It is used particularly in Emilia-Romagna and Catalonia.

Production cells and team working are less used to flexibilise working, although some

[2] J. Atkinson. Manpower strategies for flexible organisation. *Personnel Management*, 1984.

[3] A third form of flexibility is financial flexibility, in which wages reflect the performance of the firm and of individual employees. The project disregarded this type of flexibility even though it may be seen as a means of achieving the other two.

[4] Generally speaking, as the 1997 Green Paper points out, flexible working has not yet made sufficient headway in Europe.

firms - generally larger ones - have adopted them as solutions, mainly in Emilia-Romagna, but also in France and Catalonia. They are rarely found in Portugal.

Part-time working is the form of flexible working least used in the metal industry, although the situation varies from one country to another. It is more common in France and Emilia-Romagna but rare in Portugal and non-existent in Catalonia. As with temporary contracts, use of part-time working depends very much on a firm's size and increases as firms get larger.

3.3 Changes in firms brought about by flexible working

For firms in the metal industry introducing flexible working leads to major changes under four different headings:

- ❏ corporate strategy;
- ❏ management of human resources;
- ❏ personnel;
- ❏ internal structure and organisation.

Introducing flexible working even influences a firm's strategy, involving as it does a switch from a rigid structure, whose aim is to produce more and cheaper, to a more flexible one which seeks to meet demand more rapidly and efficiently in terms of quality, price, innovation, lead times etc. This calls for a change of mentality and attitude to work, affects horizontal and vertical communication and interdepartmental relations and thus affects the whole organisation, its management, production departments, management of human resources, procurement, computerisation etc. and the employees themselves.

Management of human resources is decisive in introducing and establishing flexible work organisation in a firm because of the importance of the human factor for its success. Firms need constantly to fine-tune their workforce to the various quantitative and qualitative fluctuations (variability of working time, jobs, creation of production cells, skills, behaviour etc.) and to ensure that workers' qualifications, skills and attitudes are compatible with flexibility. They thus need to give priority to policies designed to smooth the path to the new system with financial or other incentives, training programmes and appropriate recruitment methods, and management of working time and job sharing. The general tendency would seem to be towards an increasingly individualised focus in personnel management of human resources in terms of pay, working hours, training etc.

Flexible working brings with it changes for all employees, especially those on the shop floor. They affect a worker's relationship to his job(s) and his relations with his fellow-workers and the firm's structures, and duly influence both individual and group attitudes and behaviour because of the new demands they make in terms of mobility, versatility, independence, responsibility and the like. Flexible working, in fact, calls for qualifications, skills and attitudes differing from those required under the old system.

The internal structure and organisation of firms adopting a form of flexible work organisation distinguishes them in two ways from firms adhering to the traditional model. Firstly the former pyramid-like hierarchy is delayered, encouraging greater worker involvement and responsibility and consensus decision-making. The second difference relates to the middle management, whose role is of prime importance in introducing flexibility and making its work.

The changes wrought by flexible working vary considerably from one firm to another, their number and scope depending on the nature of the system adopted. The most modern generally involve more radical changes. The way in which the new system is introduced also affects their scope: a structural reorganisation involving the overhaul of corporate strategy will have more consequences than the implementing of a number of isolated decisions.

3.4 Flexible work organisation as adopted by firms in the sector

Although firms can be led to adopt flexible work organisation for a variety of reasons, three situations were frequently encountered in the regions studied.

The first is that of a firm seeking to enhance the flexibility of its production

plant, supplies and mode of working in order to boost production and/or enhance product quality. This is generally the case of medium-sized or larger companies, some of which work to a strategic plan generally drawn up by the management,

The second situation is that of a firm wishing to enhance flexibility via job rotation, not for strategic considerations but in order to meet current and future skill needs; for example, to be able to cover for workers on sick leave, render teams more profitable or cope with a sudden surge in demand. This tends to be the case of small and medium-sized enterprises, which are unconsciously drawn to flexibility because of the limitations imposed on them by their size and mode of operating, or firms whose work calls for intensive rotation between jobs and thus for multiskilling on the part of its workers. Such firms may be involved in machine construction or be subcontractors: their often very short production runs are governed by tight demand specifications.

The third case is that of a firm wishing to take advantage of employment regulations in their country in order to vary their workforce as a function of production requirements. This is a more traditional form of flexibility.

As we have already mentioned, flexible working has important consequences for a firm's personnel, especially for those directly involved in production. The changes affect their skills, aptitudes, responsibilities and attitudes. Supervisors and middle managers are affected by these changes just as much as production workers, though with certain differences. Every form of flexible work organisation brings with it specific consequences for the personnel.

Their knowledge and skills require extending. A basic knowledge of metals and their properties needs to be supplemented by a broader, technological and more general know-how (quality, computer literacy etc.), which is imperative in the case of companies wishing to ensure worker versatility or to create production cells or teams.

Types of competence required and responsibilities also tend to increase. Workers are expected to play a greater part in certain aspects of the firm's activity, such as supplies of raw materials, product quality, works safety and maintenance. Initiative and the ability to identify and solve problems are also in demand, being considered fundamental in a working organisation based on production cells or teams.

Contrasting with traditional production systems, certain attitudes, such as the ability to communicate, to work in a team, and to adapt to the firm's requirements are regarded as essential, whatever the form of flexible work organisation adopted.

Sometimes enterprises in the metal industry fail to gain the hoped-for benefits from flexible working. Those questioned as part of the project offered a number of explanations as to why this was so:

❏ flexibility had not been treated as a strategic objective and its introduction was not underpinned by adaptation throughout the organisation;

❏ flexibility in working time, job rotation and the like was not managed with the appropriate tools. This is especially serious where the firms concerned are large and equipped with complex computerised management systems;

❏ no machinery was created to ensure that information got passed up to management level so that flexible operation could keep pace with the company's development;

❏ staff were not adequately prepared or trained to cope with the new way of working, despite the need for certain knowledge, skills and attitudes;

❏ no financial or other incentives were provided to motivate personnel and encourage them to accept the consequences (and constraints) of flexibility – bank holiday working, continuing training and multitasking;

❏ failure to deal with the hostility of a section of the personnel opposed to change. These are often older employees or those with the longest service with the firm; they are sometimes excluded from flexible working schemes.

4. Impact of flexible work organisation on the metal industry's labour force

As already mentioned, the introduction of flexible working has a substantial impact on a worker's relationship to his job or jobs, which become more varied and less monotonous, as well as his relations with colleagues and with the firm's structures generally. The ideal profile for employees, be they workers or middle managers, must evolve for them to possess the necessary technical knowledge, experience, know-how, personal skills and individual and group attitudes. The ability to combine technical and behavioural know-how is essential. On the other hand, the effect of the various forms of flexible work organisation on employee profiles varies. Those with the strongest impact are job rotation, the creation of production cells and team working, whereas making working time more flexible by means of temporary contracts or outsourcing is weaker.

Middle managers have a vital role to play in implementing flexible working and ensuring it functions smoothly. From this point of view the ideal profile for a middle manager involves a certain amount of technical knowledge coupled with a considerable ability to organise and manage human resources. More details are given in Table 1.

A middle manager needs to possess technical knowledge in a number of metal-related fields - mainly mechanical engineering, but to a lesser degree hydraulics and the properties and processing of metals. General skills connected with quality assurance and control, works safety, production management, organisation and planning, process development and maintenance are also necessary. Small firms need middle managers who mainly possess basic technical skills, while larger enterprises place more stress on general skills.

The number of tasks middle managers need to perform over and above those directly concerned with production is on the increase. They include inspection, checking and control, management of tools, machine set-up, preventive maintenance, coordinating group working, etc. The trend is particularly noticeable in smaller firms.

The greatest changes which flexible work organisation has brought to the middle manager's profile concern abilities and attitudes. Among those now required are a willingness to accept responsibility; the ability to motivate workers, to interest them in their work and to encourage initiative; to translate objectives into concrete decisions; to identify and solve problems, to train others; to work in a team; to take initiative; to communicate; and to direct people in a manner ensuring that rules are respected. An analytical ability is also deemed necessary. All these qualities are particularly important in larger firms.

We would add that in a firm adopting flexible work organisation, the ideal age for a middle manager varies between 30 and 39 and 40 and 49.

The introduction of flexible working in firms has also had its effects on the ideal worker profile (see Table 1).

He or she must master the various technical tasks entrusted to him. Consequently his technical knowledge, particularly in the fields of mechanical engineering and the properties of metals must be greater than was the case under traditional production systems. He or she also needs to possess certain general skills in fields such as works safety, quality assurance and maintenance.

There are also a greater number of job-related tasks. Workers are increasingly made responsible for such tasks as machine set-up, preparing documentation, feed and discharge of machines, management and replacement of tools and organising and checking their own work.

In addition, flexible work organisation calls for important qualities such as motivation and a sense of responsibility, the ability to work in a team, adaptability, an aptitude for continuing learning, and the ability to identify and solve problems. Enterprises often prefer to take on workers who meet these requirements even if they lack other kinds of knowledge or experience.

Table 1

Ideal profile for middle managers and workers in a flexible working system: Spain, Italy and Portugal (% response)

	Middle managers (*)			Workers(*)		
Characteristics	V	M	U	V	M	U
Basic knowledge of metalworking						
Properties of metals	61.9	33.1	5.1	35.9	41.9	22.2
Processing of metals	55.6	41.0	3.4	23.2	47.3	29.5
New materials	40.0	51.3	8.7	13.8	46.8	39.4
Mechanical engineering	84.0	15.1	0.8	53.4	40.5	6.0
Hydraulics	50.9	36.0	13.2	22.7	53.6	23.6
Pneumatics	47.8	38.3	13.9	24.5	46.4	29.1
Basic technical knowledge						
Electricity	43.3	50.8	5.8	27.7	49.6	22.7
Electronics	35.8	53.3	10.8	13.6	52.5	33.9
Computers	45.0	50.0	5.0	16.9	53.4	29.7
Basic general skills:						
Quality assurance and control	86.4	12.8	0.8	66.1	29.8	4.0
Works safety	85.5	13.7	0.8	71.5	25.2	3.3
Maintenance	64.0	34.4	1.6	42.6	48.4	9.0
Production management, organisation and planning	84.1	15.9	0.0	11.6	58.7	29.8
Computer programming	32.8	43.4	23.8	6.6	36.1	57.4
Environment	49.2	43.4	7.4	26.7	50.0	23.3
Logistics	52.4	38.7	8.9	7.5	56.7	35.8
Product/process development	82.9	15.4	1.6	30.8	54.2	15.0
Languages	33.3	40.8	25.8	5.9	41.2	52.9
Specific job-related skills						
Machine set-up	73.5	20.5	6.0	67.0	25.2	7.8
Feeding and discharging machines	57.5	31.0	11.5	58.3	31.3	40.4
Tool management	76.5	20.9	2.6	54.4	41.2	4.4
Tool replacement	63.5	26.1	10.4	56.5	36.5	7.0
Preventive maintenance	70.4	26.1	3.5	46.1	44.3	9.6
Machine servicing	40.5	50.0	9.5	28.7	46.1	25.2
Working methods	83.9	15.3	0.8	48.7	39.8	11.9
Inpection and checking, self-monitoring	84.9	13.4	1.7	48.3	27.5	8.3
Preparing documentation	67.8	28.0	4.2	64.2	52.6	14.0
Abilities/skills						
Decision-making	91.9	5.6	2.4	23.3	64.7	12.1
Creativity	76.2	19.8	4.0	46.6	39.7	13.8
Training others	91.1	5.6	3.2	34.2	53.5	12.3
Negotiating	67.2	26.2	6.6	5.2	55.7	39.1
Self-directed learning	72.0	26.3	1.7	65.2	31.3	3.5
Analytical ability	82.0	15.6	2.5	46.8	44.1	9.0
Identifying and solving problems	91.8	7.4	0.8	62.8	33.6	3.5
Team working	88.8	9.6	1.6	81.0	172	1.7
Leadership	83.9	12.9	3.2	13.3	64.6	22.1
Ability to work independently	79.5	17.2	3.3	47.4	44.7	7.9
Adaptability	77.9	20.5	1.6	70.4	26.1	3.5
Internal/geographical mobility	49.6	41.0	9.4	42.3	40.5	17.1
Ability to communicate	85.8	11.7	2.5	50.0	41.1	8.9
Initiative	87.5	10.8	1.7	48.7	43.4	8.0
Sense of responsibility	94.3	4.9	0.8	73.9	23.5	2.6
Motivation	92.6	5.8	1.7	86.2	11.2	2.6
Age						
20 - 29	45.3	46.5	8.1	73.1	22.1	4.8
30 - 39	81.1	15.3	3.6	72.0	25.2	2.8
40 - 49	63.6	32.3	4.0	35.2	56.0	8.8
50 or over	21.6	50.0	28.4	18.6	44.2	37.2

(*) V = Necessary; M = Moderately important; U = Unnecessary

The ideal age for workers in a company with flexible work organisation is between 20 and 39. Firms often stress that young people are less hostile to flexible working than are older workers or those with longer service.

A high percentage of firms in the metal industry recognise that production personnel (middle managers, established workers and those recently recruited) suffer from considerable shortcomings as regards the requirements for a flexible working system. These shortcomings are set out in Table 2.

Recently recruited workers are lacking in knowledge of new materials, the properties and processing of metals, mechanical engineering etc., as well as in other key areas such as quality, process and product development, and maintenance. Enterprises consider their performance very poor in such areas as preventive maintenance, machine set-up and servicing, inspection and checking (self-monitoring), and poor as regards independence, identifying and solving problems, and decisiveness. Small firms encounter the greatest difficulty with this group of workers, particularly when it comes to specific tasks, which workers recently recruited should be able to carry out.

Middle managers and established workers display fewer shortcomings than recently recruited workers do. However, in their case the problems relate to more aspects of their activity.

Middle managers reveal gaps in knowledge in such fields as new materials, use of computers, electricity and electronics, languages, environmental matters and product and process development. Their skills as regards organisation and management of human resources also leave much to be desired, with the result that their performance is mediocre when it comes to communication, analytical ability, leadership, training others and team working.

Their knowledge of hydraulics, mechanical engineering, electricity and computers is also found to be insufficient, as are more general skills in the areas of quality, maintenance, and works safety, languages and product and process development. They have little experience in preventive maintenance and machine servicing and lack a number of important skills such as the ability to identify and solve problems, take the initiative, communicate, adapt, work in a team, decisiveness, a sense of responsibility and motivation.

Firms in the metal industry have taken the following steps to enhance the skills of employees with flexible work organisation in view:

❑ on-the-job training: watching an experienced worker perform a task, followed by training under the supervision of a middle manager or other responsible person. In SMEs, and especially in very small firms, measures taken to train workers are generally limited to what we have described. Larger firms use work-based training to enhance versatility, but unlike smaller firms this generally forms part of a structured training programme with definite objectives;

❑ training concerning a wide variety of subjects such as machine operation, computers, quality, works safety, preventive maintenance, organisation etc. This is generally provided in medium-sized or larger firms and may involve different types of activity:

• induction courses for new recruits to give them the basic knowledge needed for the job(s) they will be given and generally to familiarise them with the firm. It should be remembered that these are the workers whose shortcomings in the knowledge, performance and skills needed for flexible working are most noticeable;

• switching jobs also provides an opportunity for the acquisition of different technical and practical skills. Where the new type of work is related to the firm's purchase of new machinery or equipment, training is generally given by the supplier;

• training is also organised to consolidate certain abilities and attitudes such as communication, team working and motivation.

❑ Formal and informal meetings between workers, middle managers and heads of

Table 2

Areas of inadequate performance of middle managers, workers and newly recruited workers in flexible working systems: Spain, Italy and Portugal (% response)

	Middle managers (*)			Established workers (*)			Recently recruited workers (*)		
Characteristitcs	V	P	S	V	P	S	V	P	S
Basic knowledge of metalworking									
Properties of metals	20.2	60.6	19.1	24.7	55.7	19.6	58.6	23.0	18.4
Processing of metals	21.9	57.3	20.8	25.8	54.6	19.6	59.1	21.6	19.3
New materials	32.6	50.5	16.8	38.3	39.4	22.3	62.8	16.3	20.9
Mechanical engineering	18.6	52.6	28.9	19.2	67.7	13.1	56.7	33.3	10.0
Hydraulics	22.6	54.8	22.6	37.5	50.0	12.5	55.8	32.6	11.6
Pneumatics	25.5	50.0	24.5	34.4	45.8	19.8	50.6	32.9	16.5
Basic technical knowledge									
Electricity	26.0	58.3	15.6	33.7	53.1	13.3	53.8	29.7	16.5
Electronics	37.2	51.1	11.7	49.0	32.3	18.8	55.6	26.7	17.8
Computers	35.8	53.7	10.5	44.1	43.2	15.8	42.5	42.5	14.9
Basic general skills									
Quality assurance and control	19.2	57.6	23.2	30.0	55.0	15.0	69.6	20.7	9.8
Works safety	15.0	65.0	20.0	31.4	53.9	14.7	54.8	34.4	10.8
Maintenance	17.0	61.0	22.0	31.1	56.3	12.6	62.4	29.0	8.6
Production management, organisation and planning	20.8	52.5	26.7	43.0	41.0	16.0	52.2	38.0	9.8
Computer programming	36.4	43.4	20.2	51.5	26.3	22.2	49.4	32.6	18.0
Environment	23.2	62.6	14.1	31.0	54.0	15.0	44.9	40.4	14.6
Logistics	21.0	62.0	17.0	36.0	46.0	18.0	52.8	31.5	15.7
Product/process development	24.2	60.6	15.2	38.0	47.0	15.0	64.8	24.2	11.0
Languages	50.5	36.4	13.1	49.0	25.5	25.5	48.9	32.2	18.9
Specific job-related skills									
Machine set-up	18.4	45.9	35.7	22.0	58.0	20.0	57.3	30.3	12.4
Feeding and discharging machines	18.8	40.6	40.6	20.0	54.0	26.0	52.8	32.6	14.6
Tool management	18.6	47.4	34.0	25.7	56.4	17.8	55.6	33.3	11.1
Tool replacement	18.6	42.3	39.2	20.0	59.0	21.0	55.6	33.3	11.1
Preventive maintenance	19.4	59.2	21.4	37.3	52.0	10.8	61.5	26.4	12.1
Machine servicing	15.3	62.2	22.4	30.7	56.4	12.9	59.3	25.3	15.4
Working methods	20.2	59.6	20.2	27.0	56.0	17.0	52.2	34.4	13.3
Inpection and checking, self-monitoring	20.2	53.5	26.3	26.2	51.5	22..3	56.5	28.3	15.2
Preparing documentation	26.3	50.5	23.2	29.3	49.5	21.2	55.1	27.0	18.0
Abilities/skills									
Decision-making	20.4	58.3	21.4	35.6	50.5	13.9	56.0	28.6	15.4
Training others	26.2	57.3	16.5	32.3	56.6	11.1	52.7	29.7	17.6
Negotiating	29.0	52.0	19.0	30.0	53.0	17.0	45.1	39.6	15.4
Analytical ability	26.7	57.4	15.8	31.3	54.5	14.1	46.1	37.1	16.9
Identifying and solving problems	21.2	56.6	22.2	30.1	62.1	7.8	56.7	28.9	14.4
Team working	20.8	62.4	16.8	23.5	62.7	13.7	42.2	43.3	14.4
Leadership	29.1	54.4	16.5	29.7	48.5	21.8	55.1	27.0	18.0
Ability to work independently	13.0	61.0	26.0	22.5	58.8	18.6	58.0	26.1	15.9
Adaptability	20.2	61.6	18.2	23.0	64.0	13.0	41.8	46.2	12.1
Internal/geographical mobility	19.6	50.5	29.9	22.7	55.7	21.6	39.1	41.4	19.5
Ability to communicate	24.5	60.2	15.3	26.5	62.7	10.8	36.7	51.1	12.2
Initiative	25.0	51.5	23.5	29.7	62.4	7.9	51.7	37.1	11.2
Sense of responsibility	22.2	48.5	29.3	30.0	56.0	14.0	42.2	47.8	10.0
Motivation	23.5	55.1	21.4	31.0	55.0	14.0	46.6	43.2	10.2

(*) V = Very poor; P = Poor; S = Satisfactory

production and personnel departments designed to inculcate and reinforce such qualities as motivation, a sense of responsibility, the ability to communicate or to identify and solve problems, initiative and team working. These meetings are generally organised as a form of continuing training in medium-sized and larger firms; workers are encouraged to make their own suggestions for improvements.

5. The education system's contribution towards achieving flexible work organisation in the metal industry

Most firms in the metal industry believe that the failure of the education system to equip young people with the training necessary to cope with flexible working now or in the future raises serious problems. In all 71% of firms questioned in the course of the project said that training currently provided was insufficient for the needs of a flexible working system. The highest percentage was in Catalonia (75%) with a somewhat lower figure for Emilia-Romagna and Portugal (67% in both cases). The sharpest criticism came from smaller firms, who generally have fewer resources at their disposal to supplement workers' initial training and are thus more vulnerable when that already provided is less than adequate. Medium-sized and larger firms are better able to organise supplementary training with flexible working in view.

Criticisms of the education system in the regions studied related mainly to vocational training and training for the unemployed (see Table 3). Respondents recommended that all those concerned should act decisively and promptly to remedy the situation, placing the emphasis on:

❏ practical training for young people who are not sufficiently prepared for working life and even less for joining an organisation with flexible work organisation. Their practical training, it is claimed, is technically inadequate and they do not know how a firm is organised;

❏ acquiring skills and improving ability and behaviour indispensable for the smooth operation of any flexible working system;

❏ a basic knowledge of metals and metalworking and other aspects of technology so as to turn out versatile workers with specialist skills and experience.

6. Outline proposals for training to enhance the performance of workers in metal industry firms with flexible work organisation

6.1. Flexible working and the shop-floor workforce

Work organisation has an essential bearing on performance and requires careful consideration, as human resources have become a major factor in a firm's competitiveness. This is particularly true now that we are currently witnessing changes in work organisation based on the innovative modern concept of flexibility, which is indispensable in the present industrial climate. It is obviously vital that staff at all levels be equipped to cope with the new environment, which demands a greater range and combination of knowledge, skills, experience and personal qualities. A rethinking of the importance and scope of flexibility in modern firms has to take it well beyond traditional concepts of management, flexibilising working time or simplifying hiring and firing, and include aspects such as responsibility, independence, skills, training etc. There is a need for a modern flexibility culture that permeates the whole of industry, based on such fundamental factors as

❏ technology, and especially working methods;

❏ individual and group mentality;

❏ organisation of the firm and of teams.

Flexible work organisation is based on a new type of worker whose principal characteristic is versatility. All the various forms

Table 3

Firms' assessment of existing training's ability to meet the needs of flexible work in Spain, Italy and Portugal

Level of training	Positive	Average	Negative
Level I vocational training	11.4	43.9	44.7
Level II vocational training	11.3	58.3	30.4
Level III vocational training	33.3	45.6	21.1
University-level technical instruction	29.1	51.8	19.1
Continuing training	21.7	56.5	21.7
Training for the unemployed	11.7	45.6	42.7

of work organisation call for workers with multiple skills, capable of adapting to their environment and accepting the challenges their job presents. A worker, therefore, must be given basic preparation and training combining technical, sectoral and general knowledge, skills, know-how and specific abilities, to assure her the versatility needed to adapt easily to her various jobs. Technical, methodological and relational skills all need to be developed, although the degree of multiskilling required will vary from one firm to another.

In addition to multiskilling for versatility, an employee in a firm with flexible work organisation must possess the following qualities:

❏ adaptability and willingness to learn;

❏ willingness to integrate into the life of the firm and accept responsibility;

❏ personal qualities and aptitudes equipping him for team work;

❏ familiarity with information and communications technology.

A middle manager working in the sector will require:

❏ a basic knowledge of the properties of metals, mechanical engineering and industrial computer applications;

❏ a basic general knowledge in such fields as quality, inspection and checking, works safety, production management, organisation and planning, and product and process development;

❏ the ability to organise inspection and checking (self-monitoring) and to supervise working at individual job level;

❏ qualities and abilities relating to organisation, management and training of human resources to encourage responsibility, motivation, decisiveness, and problem solving ability.

The basic profile of workers in a flexible working environment calls for the following:

❏ a basic knowledge of metals and metalworking and industrial computer applications;

❏ a generalised knowledge of works safety, quality and self-monitoring;

❏ the ability to perform specifically job-related tasks such as machine set-up, preparing documentation, feeding and discharging machines, and tool replacement;

❏ motivation, team working ability, responsibility and both internal and geographical mobility.

6.2 Training shortcomings and their solution

At present the training inadequacies of workers employed in industry hinder the introduction of flexible work organisation. They are particularly serious in the case of young people in training, justifying the claim that the education system is failing to provide the type of training required by firms wishing to adopt flexible working. The present education system is designed to meet the needs of traditional industrial organisations; consequently, it provides training in conventional specialist fields with no regard for modern requirements such as multiple skilling, adaptability, lifelong learning etc. On the other hand, few enterprises provide specific training when embarking on flexible work organisation, generally confining their efforts to practical on-the-job training. Then again, many firms need to recruit personnel because they lack people with the necessary qualities and qualifi-

cations enabling them to be trained to introduce and operate a system of flexible work organisation. Hence the urgent need for all concerned to take action, with the emphasis on initial vocational and continuing training.

a) Initial vocational training

Initial vocational training provided under the school system needs constantly to evolve in order to track the changes in the economy and in firms. The relationship between the education system and industry need strengthening in the interests of closer cooperation on training content, methods and tools, and to enable students to acquaint themselves with industrial realities. Briefly, what is needed is to narrow the gap that separates school and the world of work, in the awareness that this gap hinders the creation of new organisational structures and poses an obstacle to firms' present and future competitiveness.

Initial training provision under the education system should have a twofold focus:

❏ basic theoretical and practical instruction designed to prepare students for the demands of versatility and to introduce them to the principles underlying new forms of flexible work organisation;

❏ training in various skills useful in different jobs and types of activity.

On completion of training students should therefore have acquired the following knowledge and skills:

❏ a basic knowledge and skills relating to metals and technology - properties of metals, new materials, mechanical engineering, industrial computer applications, electronics etc. - enabling them to perform a job in a firm in the sector concerned;

❏ more specialised knowledge connected with different areas of the metal industry, some of which are highly specialised. These are mainly the more traditional activities, which are also those in need of labour. Two aspects should be given particular attention – direct metalworking and work involving the use of machine tools;

❏ more general skills which the education system should be compelled to include in training programmes at all levels – quality assurance, maintenance, works safety, use of computers etc.

❏ basic general training in specifically job-related tasks – machine set-up and feeding, identifying and solving problems etc.;

❏ the attitudes required for successful flexible working – a sense of responsibility, the ability to exercise self-criticism, a willingness to address problems, work in a team, learn etc., together with the fundamentals of learning methods, problem solving, decision-making, communication and information management etc.;

❏ a general knowledge of the nature and operation of modern firms and flexible work organisation.

b) Continuing training

Continuing training plays a vital role in enabling workers to adapt to a flexible working system:

❏ by making good shortcomings in the initial training of young people joining the firms concerned;

❏ by encouraging adaptability in workers faced with the demands of flexible working;

❏ by improving workers' training and qualifications;

❏ by anticipating future development and their consequences.

Continuing training should be adapted to the circumstances of each individual firm, taking into account the particular features of its production, internal structure, organisation etc. It should always include:

❏ information on the nature of the firm's activity and its organisation (products, processes, internal structure etc.) while also dealing with special aspects of individual jobs. This type of training can be provided internally and should be given to all workers;

❏ updating of skills and other training aimed at ensuring versatility

• theoretical and practical training concerned with materials, products and production methods adapted to the category and level of the workers concerned. Its purpose may be to make good the shortcomings of more recent recruits or to give them additional knowledge called for by advances in technology, such as industrial computer applications and electronics.

• more general skills relating to quality assurance, maintenance, works safety and the like, adapted to the category and level of the workers concerned, their experience and the direction in which the firm is evolving;

• practical training that is specifically job-related, given and supervised by the firm's own employees so as to accord with its objectives;

❑ training aimed at encouraging certain attitudes and abilities on the part of individuals and groups – motivation, team working, sense of responsibility, identifying and solving problems, and initiative. This type of training should be provided informally, for example through internal meetings. Its nature, however, will depend on factors such as the firm's size and type of activity, workers' age and skill level, and the quality of the industrial environment. In practice each company will need to design the type of training it judges suitable for its needs (those taking part, frequency, formal or informal methods etc.). This type of training may help to pinpoint gaps in the staff's knowledge and skills or other production-linked problems.

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Coaching in education for training staff in the building trade

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In German craft trade enterprises, on-the-job training is not usually conducted by the formally qualified master but by journeymen and other workers. Although they do not possess any educational qualifications, they are assigned trainees according to workload demands. This article discusses what preconceptions and principles these 'part-time' trainers have and how they approach their training duties. It also proposes improvements to coaching methods for training staff. The central issue is whether we should cease to demand that all prospective masters acquire educational knowledge and teaching skills and instead concentrate on ensuring that the people who actually conduct training receive more flexible and demand-oriented preparation for their task. Not insignificantly, this would also allow people who are not qualified masters to realise their aspirations of founding an enterprise and conducting training. German regulations currently thwart such aims.

Introduction

The main feature of the German dual vocational training system is that training is conducted in two locations – at school and in the workplace. Legislation demands that at least one person within an enterprise has an educational qualification so as to guarantee the success of on-the-job training. For craft trades this means that prospective masters must have passed a theoretical and practical examination in vocational and occupational education. Educational theory constitutes Module IV of the master craftsman examination, as the following overview shows.

Overview of the Master craftsman examination modules

Module I:	Practical examination
Module II:	Theoretical examination
Module III:	Business administration, commercial and legal examination
Module IV:	Examination in vocational and occupational education

The high theoretical status of vocational and occupational education in the master craftsman examination contrasts sharply with day-to-day practice. In many enterprises the master is the only member of staff with an educational qualification and can thus only take on a limited number of training tasks (cf. Arnold, 1983, pp. 82-3; Bausch, 1997, pp. 22-5; Schmidt-Hackenberg et al., 1999, p. 12). All employees within an enterprise contribute to the training process whenever a trainee is allocated to them for a particular task. However, they usually receive no guidance on how to do this.

This contradiction between compulsory educational qualifications for prospective masters and the empirically proven fact that all other employees undertake training in addition to their normal workload led us to ask how these part-time trainers approach training tasks and what assistance and guidance they would welcome.

A study was initiated to seek empirically supported answers to these questions. From September 1996 to February 1997, 42 participants in a preparatory programme for the building trade master craftsman examination (bricklayers, concreters, carpenters and tile stove builders) were interviewed for 20 minutes each on their experiences as journeymen training others in small and medium-sized enterprises (for more precise details cf. Leidner, 2001).

Results

Part-time trainers in the building trade describe their approaches to training in a variety of ways. These can be classified as *instruction* (i.e. demonstrating and explaining), *authoritarian influence* (or dominance), *detachment* and *integration of trainees into the work process*. Part-time trainers thus employ various means of imparting knowledge and skills. They enrich their training approaches with a wealth of ideas and make flexible use of opportunities to communicate training content. However, they are usually bound to whichever current task concerns them

and thus see their training role as isolated and one-dimensional, and they mainly restrict themselves to a single approach. They are therefore not able to take advantage of the numerous possibilities for conveying training content. Furthermore, they do not adapt their own methods to the demands of the subject matter.

Relationships between trainees and part-time trainers range from warmth and affection to more or less open hostility. Respondents' perceptions of their relationships with trainees prove to be dependent on their attitude and approach to training. Trainers who prefer the instruction method see themselves as having a more symmetrical relationship with their trainees. Part-time trainers who adopt the integration or dominance approach usually have an unequal relationship with trainees in which they try to demonstrate their own superior status. Indifference towards trainees is typical of the detached approach. In general, the part-time trainers interviewed describe their relationships to trainees as mainly sympathetic and symmetrical. In isolated cases respondents' remarks suggest that they find trainees a burden, or that they set out to demonstrate their power over trainees and to put them in their place.

Part-time trainers do not usually appreciate the trainees' role as learners. They tend to regard them more or less as full members of staff. This attitude goes hand in hand with their limited awareness of their own approaches as trainers.

The journeymen providing training want to make trainees independent and to ensure the necessary tasks are accomplished. The fact that trainees' independence is stressed repeatedly in several different contexts can be interpreted in two ways. On the one hand, trainees who can work independently and anticipate stages of the working process can contribute greatly to relieving pressure on the part-time trainers. On the other hand, the ability to carry out tasks unaided can be seen as a primary learning objective, evidence that the trainee has acquired a desirable professional skill. Purely instructional objectives such as communicating learning content or preparing trainees for examinations are less important than ensuring that they can show initiative.

Respondents' experience during their own training is a major influence on the way in which they set about training others. This precept is often summed up in terms of the "golden rule" (i.e. the ethical principle of doing unto trainees as you would like people to do unto you). However, respondents are not guided by the requirement for systematic communication of learning content laid down in the training regulations. Another principle, used in the construction industry for example, is to teach trainees how things work in a single building project so that they are capable of performing tasks independently. Part-time trainers pay as little attention to aids to decision-making which do not derive directly from the work in hand as they do to trainees' needs. Frequently, training content is taught in accordance with the training regulations only where it coincides with traditional training, which usually means the needs of the moment.

Respondents have little idea of what resources could improve their performance as trainers. They expect support to come from colleagues rather than via courses or other measures to improve their own teaching skills. However, part-time trainers consider that structural changes within companies, particularly reduced pressure of time, would give them the opportunity to expand their range of options.

The study under discussion did not directly address the need for further training. However, the answers to questions on potential support for training activities suggest that part-time trainers believe that improvements are more likely to emerge through communication with other people (usually superiors) and through changes in the training structure. They seem less convinced of the benefits of acquiring educational and specialist knowledge and skills themselves. This point of view was particularly stressed by one interviewee who had gained pedagogical experience in a workshop for the disabled and psychologically disturbed. He felt that a mentoring system would be more helpful than theoretical knowledge. However, he had little to say about what form the mentoring should take. The support from masters which the interviewees desire exists only as an ideal in the educational literature on craft trades. In

the reality of in-company vocational training it is a fiction.

Conclusions

When designing training programmes for trainers, we must assume that in practice companies no longer have a single person responsible for training and that we cannot therefore devise a uniform curriculum for them. Instead, all potential trainers should be offered the chance to gain relevant skills. Measures should not take the form of specific compulsory courses on basic methodological skills for all craft trades, but should offer voluntary opportunities for trainers to further their knowledge alongside their work so that they can address problems as they arise and can gather information on a case by case basis. Coaching of this kind for trainers could evolve into a more permanent continuing training scheme which allowed participants to learn about topics of immediate interest and gradually to acquire training skills.

This type of coaching for trainers could take the form of "team supervision" sessions alongside normal work, which would preferably take place on company premises, or as an open forum on training problems, for example on the Internet, run by the vocational training institutions. Trainer coaching of this kind could tackle trainers' needs for support, information and contact as and when they arise. It would also avoid the problem that employees who are selected to take training courses must be released from work to attend them. This can be impossible, especially in smaller companies.

However, implementing the measures mentioned for coaching part-time trainers does not just mean creating the necessary infrastructure; it also requires part-time trainers to become aware of their own training methods. As the interviews show, they still consider their training duties a normal part of their everyday working life which does not necessarily require much extra thought. Their awareness can be increased by improving the range of advice and information on offer. If this is taken as the starting point for coaching, then flexible, voluntary, needs-oriented continuing coaching for part-time trainers in the workplace will make them happier and more competent educators, thus contributing to improved overall training quality.

The content of the coaching for in-house trainers should follow on naturally from the ways of working with which they have been familiar since they started their own vocational training. The training approaches described above could be explored and gradually extended, for example by presenting possible alternatives and then considering how these ideas might be implemented in working practice, and discussing their advantages and disadvantages. In addition, participants' experiences could form the basis for discussion of the various methods available and the requirements for successful learning. The one-dimensional concept of learning as a process of input, storage and output of knowledge and skills could prompt a discussion on learning conditions and concrete ways to implement methods. Coaches could explain the everyday meaning of pedagogical expressions such as "gradual accumulation of skills" or "building on existing knowledge" and ask what new, concrete activities these could engender. Coaching could take a methodological approach, with participants practising certain basic recurrent activities such as devising and presenting a brief sequence of job-related tasks or giving a talk. Other issues which would have to be addressed are to what degree work sequences can be isolated from the normal working process and what principles should be followed when demonstrating tasks – speed, for example, the ideal sequence of steps, or whether or not actions should be accompanied by verbal explanations. Clear emphasis should be placed on internalising a few simple rules in order to ensure that teaching is planned systematically. These rules should always draw on the subjective theories identified through the experiences of the part-time trainers, since these may well reflect their existing teaching habits, which need to be incorporated into new or modified routines.

Another important function of coaching for trainers is to equip them to develop action plans based on didactic principles and to assess these according to the re-

quirements of specific situations. To do this, future trainers must be capable of evaluating situations adequately and of appreciating their own mental attitudes. They must be able critically to evaluate the new approaches that they have learned. This will facilitate the smooth transfer of these to training practice.

The methodical communication of information could take the form of exercises to enable participants to acquire a full understanding of the conditions prevailing in a given situation and to broaden the range of possible explanations. That means that more explanations for the build-up of aggression would need to be presented, for example. Dynamic explanation models, which define situations in terms of fundamentally variable phenomena, are particularly useful because this method of interpretation, using discussion of alternative ways of proceeding, achieves the desired improvement in competence. Existing motivation-oriented explanation models could be used in imparting educational skills to trainers and serve as a basis for illustrating ways of refining and developing motivation in relation to company practice. A step-by-step expansion of the ability to attribute causes to different explanations would facilitate a gradual improvement in flexible thinking. Once the future trainers are more aware of the trainees' individuality, they will be able to practise alternative forms of training with a more personal touch.

The above discussion shows that the present obligation for prospective masters to acquire an educational qualification can be problematic. Courses usually rigidly transmit knowledge and skills without asking whether or not the masters will later carry out any training duties. The abiding ideal of a master who is a qualified all-round expert in business *and* education and who genuinely contributes to society as a whole by training trainees has long since been overtaken by economic reality and increased specialisation in companies. Even if masters manage to set up their own businesses, they are usually too preoccupied with business management questions such as the acquisition and conclusion of client contracts to become seriously involved in developing intensive systematic training.

A further problem is that potential masters may not feel motivated to participate in coaching programmes since they first have to sit a compulsory examination in educational theory. In view of the general trend towards increased specialisation, it seems sensible also to regard training as a special task for which only the people who are likely actually to perform it should be trained. Needs-oriented training of in-house trainers could also improve the job prospects of foreigners in Germany, since the lack of a compulsory qualification would no longer be an obstacle to employment.

In conclusion, the above observations suggest that the current system of coaching for trainers must be thoroughly reconsidered. It is no longer appropriate that the regulations governing master craftsman examinations compel people who do not intend to undertake any training tasks to obtain training qualifications, and that those who do actually regularly perform training tasks in the workplace do not receive any grounding in how to do this, even if they would welcome it. Although the suggestions for improvement outlined above are based on the empirical results of a study into practices in the building trade, they are likely to be just as relevant for other craft trades. This is particularly true of industries which are under constant time pressure, are highly interdependent on other companies, are subject to intense competition from other enterprises (particularly from foreign firms offering cut-price services) and in which work is carried out at various, frequently changing locations.

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Transition from polytechnics to working life

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The major long-term goals of Finnish educational policy include raising educational standards. This was also one of the starting points for the reform of vocational higher education in Finland. Legislation establishing permanent polytechnics (AMK institutions) was passed in 1995. One way to evaluate the polytechnics' results in achieving their educational goals and to assess their effectiveness is to examine how their graduates gain entry to working life and what kind of jobs they find there. The article is part of a research project dealing with the labour-market position of polytechnic graduates with business and administration, technology and communications, and health care and social services degrees six months or one year after qualification. The data derive from three different surveys carried out in the relevant study fields. The findings reveal that the training received by polytechnic graduates equipped them well for finding jobs. The polytechnic graduates' ability to secure a permanent job and the nature of their tasks vary across different occupational fields and educational backgrounds.

Introduction

The major long-term goals of Finnish educational policy have been to raise educational standards and enhance educational equality (Ministry of Education, 1999; Stenström, 1995; 1997). Throughout the postwar period, there have been strong pressures to expand the Finnish higher education system. At the end of the 1980s, the Ministry of Education suggested that more vocationally and practically-oriented institutions, (polytechnics or AMK institutions, where 'AMK' is short for *ammattikorkeakoulu*) should be established alongside universities. The principles underlying polytechnic education stem from the need for a highly trained specialist workforce in the labour market (Lampinen, 1995; Ministry of Education, 1999; Numminen et al., 2001).

The arguments presented for the polytechnics reform in Finland were initially linked to the structural rigidity of vocational education, a desire to enhance the status of vocational education, and a wish to ensure the international comparability of vocational qualifications in addition to an increase in demand for higher education. Despite having been systematically developed in the 1970s and 1980s, vocational education provision was fragmented into separate study fields scattered among several small educational institutions where there was little cooperation between the different fields. In addition, the Finnish system of vocational education was difficult to grasp as a whole. Higher vocational education and its position in an international context were especially poorly understood (Numminen et al., 2001).

The Finnish polytechnics were developed using an experimental approach. The polytechnics reform began in 1991 with the introduction of legislation authorising an experimental period for setting up 22 temporary polytechnics. Legislation making the polytechnics permanent was passed by Parliament in 1995. In the reform process, the 215 former individual colleges which had hitherto delivered the highest level of vocational education in Finland were formed into 29 polytechnics. These became permanent institutions in August 2000 (Ministry of Education, 2001b).

The polytechnics reform involved a profound reorganisation of the network of educational establishments in Finland and of the Finnish school system as a whole. Single-field colleges became multi-field polytechnics and the educational system gained a new type of institution in the form of a non-university sector of higher education. As a result, the Finnish higher education system now consists of two parallel sectors, universities and polytechnics.

The training provided by the polytechnics falls into seven main study fields. The largest is technology and communications, which accounted for about a third of first-year places in 2001. The second most popular field was business and administration (27% of the total number of places) and the third was health care and social services (21%). Courses in culture constituted 8% and tourism, catering and home economics about 6% of the first-year student places. The smallest sectors were natural resources (3%) and humanities and education (2%). The polytechnics confer bachelor-level degrees requiring 140 to180

credits (3.5 to 4.5 years of full-time study) (Ministry of Education, 2001a).

The article discusses the transition from polytechnics to working life among business and administration, technology and communications, and health care and social services graduates. The polytechnics which offer business and administration programmes were designed and developed on the basis of the old commercial college graduate education system (Korhonen, Mäkinen and Valkonen, 1999). The greatest differences between this and the previous college-level education system are longer courses and the incorporation of a work placement and a final written assignment into the qualification requirements. Training for health care and social services has traditionally been based on the needs of working life. The move to polytechnics has nevertheless been seen as drastic because a unified post-secondary health care and social services education sector was established in Finland only some ten years ago, and because even without the most recent reform this particular field of education and training has been undergoing constant change (Könnilä, 1999; Korhonen et al., 2001). Engineering training was remodelled less radically because this sector embodied vocational higher education even before the polytechnics reform (Korhonen et al., 2000; Tulkki, 2001).

Aims of the study

One way to evaluate if the Finnish polytechnics are achieving their educational goals and establishing themselves as institutions with permanent relevance for the labour market is to examine how their graduates gain entry to working life and what kind of jobs they find there. The value of the polytechnics preparing students for working life depends on how employers receive their graduates and on the qualities of the polytechnics themselves.

The purpose of the study is to examine how polytechnic graduates enter working life and find employment there. Employment status and earnings can be seen as the most valid indicators of how the qualifications produced by the polytechnics are regarded by enterprises and society. The main research questions are as follows:

❏ How do polytechnic graduates enter the labour market?

❏ What is their position (job status, income) in working life?

❏ What is their own experience of the status of polytechnics in the labour market?

Data and method

Data

This article is a part of a Finnish research project dealing with the occupational status of polytechnic graduates after qualification (Korhonen et al., 1999; 2000; 2001). The project covers the most popular study fields among polytechnic applicants. The data consist of the results of three different surveys carried out on business and administration (n=896) during the 1996/97 academic year, in technology and communications (n=1021) during the 1997/98 academic year, and in health care and social services (n=925) during the 1998/99 academic year. The graduates had left their polytechnics six months or a year earlier, representing the first generation of polytechnic graduates in Finland.

Gender, age and educational background varied according to study field. Most of the business and administration (70%) and health care and social services (93%) graduates were women, most of the technology and communications graduates (82%) men. The oldest graduates were those in health care and social services (average age 29 years), followed by technology and communications graduates (28 years), with business and administration graduates being the youngest (27 years).

A quarter of the polytechnic graduates had gained a vocational upper secondary qualification before entering a polytechnic institution, half had completed general upper secondary education, while a third had both general and vocational upper secondary qualifications.

Most (92%) of the business and administration graduates had passed the matricu-

lation examination. A third of the technology and communications graduates had completed only vocational upper secondary education, and over a third of the health care and social services graduates had completed both general and vocational upper secondary education. The highest level of basic education before graduation from a polytechnic institution was found among the business and administration graduates, the lowest among the technology and communications graduates.

Method

The results of the study are based on the graduates' answers to questionnaires consisting mostly of closed questions posed by researchers. The links between individual variables were described by cross-tabulation and variance analysis. A further aim was to find out what factors best explain the phenomenon under examination. Statistical models, such as log-linear models, were employed to answer the question. A logistic regression model was used to single out the background factors which had a statistically significant link with the likelihood that polytechnic students will find a job. The advantage of a statistical model is that it enables a simultaneous examination of the effects of several variables, thus considering the associations between individual independent variables. This makes it possible to find out whether there is a link between an individual background factor and polytechnic students' employment after the effects of the other independent variables have been accounted for (Fienberg, 1976; Hosmer & Lemeshow, 1989).

The odds ratio (Tables 1–4) is a measure of association which approximates how much more likely (or unlikely) it is for the outcome to feature among those with x=1 than among those with x=0 (Hosmer and Lemeshow, 1989, 41), for example, the group of employed people as compared to someone belonging to the reference group. The coefficient of the reference group is 1.0. Each model also includes an indicator of the reliability of the data – a classification percentage which shows what percentage of the people in the research data the model is able to classify correctly.

In addition, the results concerning the graduates' incomes were analysed using a path model created with AMOS software. The fitness of the model as a whole for describing the research data is examined using the Chi-Square test. A value of $p>.05$ indicates a close fit. Another traditional measure of model fit is the goodness of fit index (GFI), which should be close to 1.0 for a good model fit. The third measure of model fit applicable here is the root mean square error of approximation (RMSEA). A value of .05 or less shows a close fit, values of .08 or more indicate a reasonable error of approximation, while values greater than 1.0 should lead to rejection of the model (Arbuckle, 1997).

Findings

Employment status

The polytechnic graduates were first asked to describe their transition to working life, that is, whether they had been able to find a job. The results reveal that about 75% of the graduates were in employment. Most of them were salary earners, only a few were freelancers or entrepreneurs. The unemployment rate among respondents was about 10%, while nearly 15% were engaged in activities outside the labour market (studying, full-time parenting). The findings mirror the figures presented in general Finnish statistics. At the end of 1999, those who had graduated from polytechnics in 1995/99 had an overall employment rate of 76% and an overall unemployment rate of 12% (Ministry of Education, 2001b). From 1997 to 1999, when the data were collected, the overall unemployment rate in Finland varied from 12.7 to 10.2% (Statistics Finland, 2001).

There were statistically significant ($p=0.021$) differences across study fields. The engineers had been most successful (79%), the business and administration (73%) and health care and social services graduates (74%) less successful in finding employment. This is because engineering is in general the profession among those covered in the study whose members are most likely to find jobs (see Ministry of Education, 2001a).

The next aim was to identify the factors that best explained success in gaining

Table 1

Factors explaining polytechnic graduates' employment

Independent variables	Model 1	Model 2	Model 3	Model 4	Model 5
Age					
Under 24	1	1	1	1	1
25–27	1.61***	1.56***	1.44***	1.30*	1.26*
Over 27	2.48***	2.37***	1.84***	1.73***	1.65***
Region					
Rest of Finland		1	1	1	1
Southern Finland		1.41***	1.42***	1.39***	1.39***
Basic education					
Matriculation Examination		1	1	1	
Vocational qualifications			1.72*	1.66***	1.59***
Matriculation Examination + vocational qualifications			1.30***	1.39***	1.34*
Gender					
Women				1	1
Men				1.37**	1.36**
Work experience					
Yes					1
No					1.22*
Classification percentage	75.5 %	75.5 %	75.5 %	75.5 %	75.5 %

* statistically significant at level p<0.05
** statistically significant at level p<0.01
*** statistically significant at level p<0.001

entry to the labour market. The data were analysed using a logistic regression model.

The general logistic regression model explaining polytechnic graduates' status in working life, (Table 1) reveals which factors affecting position have the greatest explanatory power and how adding different independent variables to the model changes the picture of what are the best predictors, which at the same time are interlinked.

It was found that age was the best predictor for access to the labour market: the older graduates were more likely to be employed and less likely to be out of work. People over 27 were 2.5 times more likely to find a job than people under 24. Region (home area), gender and work experience were also factors with a statistically significant effect on employment. Polytechnic students living in southern Finland were 1.4 times more likely to be in work than polytechnic students living in other parts of Finland. Employment was predicted also by basic education: students who had completed vocational education were more likely to gain entry to the labour market than students who had only passed the matriculation examination. The likelihood was almost as high among students with both the matriculation examination and vocational qualifications. In addition, men were 1.4 times more likely to be employed than women. Moreover, work experience acquired before polytechnic studies was found to have a statistically significant connection with employment.

Job status

Finding work is only one measure of labour market position. It is more informative to examine what kind of jobs the graduates have found. They were asked a closed question about whether their job was permanent or temporary. The results reveal that most (88%) polytechnic graduates had a full-time job but that only about half (57%) were permanently employed.

The polytechnic graduates' ability to secure a permanent job and the nature of their tasks vary across different occupational fields and educational backgrounds. Engineers seemed to have most success finding full-time (97%) and permanent (69%) employment; health care and social services graduates least success, as only a third of the latter had found a permanent job and 78% a full-time job. In health care the employment situation remains rather poor, despite improved demand for labour. Recently-graduated nurses in particular have had a hard time finding work in Finland: only about one in five graduates gain employment immediately after completing their studies, while about the same proportion leave the country to work abroad. In the 1990s the recession also affected the public sector, in which most (90%) of the health care and social services graduates work (Korhonen et al., 2001; Savola, 2000).

Polytechnic degrees should qualify their holders to perform tasks requiring professional expertise (specialist, planning and managerial positions). Thus, it is interesting to examine the status of the jobs the polytechnic graduates found in the labour market. The results, based on the graduates' own answers, reveal that there

is a very significant difference statistically between the study fields. The majority of engineering graduates felt they were carrying out the duties of a professional, whereas the majority (66%) of the health care and social services graduates and a minority (23%) of the business and administration graduates reported that they were performing ordinary worker-level tasks rather than professional duties. The respondents' occupational fields suggest this difference is gender-related. Most female health care and social services graduates (63%) were carrying out worker-level duties, whereas only 14% of engineers were found in jobs at this level.

Logistic regression analysis was used to examine which factors best predict polytechnic students' placement in positions as workers or professionals.

The logistic regression model also indicated that study field was the best explanatory variable for job status, followed, in order of explanatory power, by sex and age, especially for the worker-level jobs. The health care and social services graduates were more likely to be employed in worker-level jobs than the other graduates, who were more often found to have jobs requiring professional expertise. Women were also more likely to be given worker-level tasks than men. Further, age was one of the variables predicting job status, with young people seeming to have an added risk of obtaining a non-professional job. The factors that predicted employment in professional positions were nearly identical. The effect of age disappeared in the model explaining placement in professional positions, replaced by home area (region). The best explanatory variable for a professional job was study field, followed by gender and region. When the health care and social services graduates were used as the reference group, engineers were nearly 13 times more likely to be found in expert posts. Men were more than twice as likely to find themselves in expert positions as women. Those living in southern Finland were 1.3 times more likely to have a professional job.

Job titles indicating planning tasks and professional responsibilities are more common in technology and communications than in business and administration or health care and social services. Many criteria have been used to show that in the hierarchies of workplaces and occupations, women's fields are placed lower than men's (Kinnunen, 2001, 20; Stenström, 1995).

Table 2

Factors explaining polytechnic graduates' position in worker-level jobs

Independent variables	Model 1	Model 2	Model 3	Model 4
Study field				
Health care and social services	1	1	1	1
Business	0.36***	0.46***	0.41***	0.42***
Technology	0.05***	0.10***	0.09***	0.09***
Gender				
Women		1	1	1
Men		0.34***	0.35***	0.35***
Age				
Under 24			1	1
25–27			0.77	0.81
Over 27			0.42***	0.46***
Work experience				
Yes				1
No				0.78*
Classification percentage	77.2 %	77.2 %	78.4 %	78.3 %

* statistically significant at level p<0.05
** statistically significant at level p<0.01
*** statistically significant at level p<0.001

Table 3

Factors explaining polytechnic graduates' position in professional positions

Independent variables	Model 1	Model 2	Model 3
Study field			
Health care and social services	1	1	1
Business	4.47***	3.75***	3.65***
Technology	21.65***	13.03***	12.49***
Gender			
Women		1	1
Men		2.02***	2.02***
Region			
Rest of Finland			1
Southern Finland			1.29*
Classification percentage	75.3 %	76.7 %	76.7 %

* statistically significant at level p<0.05
** statistically significant at level p<0.01
*** statistically significant at level p<0.001

Income

Income is one of the most concrete indications of occupational status. Finnish statistics for 1999 (Statistics Finland, 2001) show there is a link between income and educational background (Appendix 1). People with tertiary qualifications have distinctly higher earnings in all age groups, while secondary education does not appear to raise monthly earnings in the same way. The highest salaries are paid to those with graduate or postgraduate education. The 1999 statistics do not distinguish between university and polytechnic graduates, so the results of this study are not comparable with them.

A comparison of income across study fields showed technology and communications graduates (EUR 1 865) had the highest income, business and administration (EUR 1 476) and health care and social services graduates (EUR 1 446) the lowest (p.<.001).

Polytechnic graduates' assessments of and satisfaction with their polytechnic qualification

Polytechnic graduates were asked to assess their status on the labour market and whether they felt they had gained or lost anything compared with the previous college-level qualification. Half the graduates believed they had gained in comparison with the earlier qualification, 46% judged they were competing on equal terms with its holders, while 4% felt they were losing out. The greatest number of those who felt that polytechnic graduates had an advantage over people with the older qualification was found among the business and administration graduates (91%). By contrast, rather less than half (42%) of the health care and social services graduates saw themselves as having an advantage over the holders of the previous qualification, whereas most of the technology and communications graduates (79%) thought that they were competing on equal terms with people with college-level qualifications.

The logistic regression model also indicates that study field was the factor most strongly associated with the graduates' own assessments of the relative status of their polytechnic qualification and the former college-level qualification. This result is expected because business and administration education in polytechnics has changed more than the other study fields, and the former technology colleges already represented vocational higher education in Finland. Age and previous work experience were also factors that increased the possibility of a graduate perceiving their current qualification giving them an advantage over holders of the older qualification. The oldest graduates (over 27 years) were most likely to feel that they had an advantage over people who held the previous qualification. Polytechnic graduates over 27 years of age were more than twice as likely to consider themselves as having gained than the under-24s. Work experience seemed to be another factor increasing the possibility of graduates seeing themselves as having gained rather than losing out with their present qualification.

The graduates were asked about their job satisfaction and about whether they had a job compatible with their training. Personally satisfying duties can be seen as an instrumental working-life value.

Results on how contented polytechnic graduates were with their jobs reveal there are significant statistical differences between study fields and job satisfaction. Job satisfaction is highest among those who work in health care and social services and among those who work in technology and communications, whereas there was no difference among study fields on respondents' degree of satisfaction with their salary. This result might be considered surprising since salaries were lowest in health care and social services and highest among engineers, but a possible explanation is offered by earlier research results from as far back as the 1950s (Herzberg, Mausner and Snyderman, 1959, 82). Herzberg and his colleagues discovered that as a factor shaping job attitudes, salary has more potency as a job dissatisfier than as a job satisfier.

Conclusion

The findings show that Finnish polytechnic graduates have been reasonably successful in gaining entry to working life but that their ability to secure a perma-

nent job and the nature of their tasks vary across different occupational fields. Graduates' study fields seem to be one of the most important factors affecting their position in working life. Engineers have had most success in finding employment and obtaining a permanent position and a high-status job. Their good position may be due to the fact that the earlier technical colleges embodied vocational higher education in Finland and the status of these colleges was high. Technology is a favourite occupational field among male students. In contrast, the health care and social services graduates failed to find a permanent job and were paid low salaries, but were satisfied with their work and working conditions. In general, health care and social services is one of the most popular study fields among female students. Business and administration is one of the largest study fields in polytechnics. Job dissatisfaction was highest among business and administration graduates. Business and administration is traditionally less occupationally specific than technology and communications and health care and social services. Moreover, the business and administration curriculum offered by the polytechnics has changed a great deal from the previous curriculum of the commercial colleges because the courses have been extended. The results of the study also confirm the close connection between education and the labour market.

When considering the findings, we must keep in mind that they describe a very short period of time between the conclusion of the graduates' studies and their entry into the labour market and that the respondents were the first generation of polytechnic students in Finland. Establishing a firm foothold in the labour market and finding a permanent position there will take longer, and it is in the longer term that we will gain a clearer picture of the effect of polytechnic graduates' study fields and educational backgrounds on their labour-market status. However, the likelihood that polytechnic graduates will find employment, continue their studies or fail to find a job depends on competition in the labour market between graduates from different types of education. Findings on polytechnic graduates should be compared with the results of studies of university graduates, similarly based on comparisons between study fields (Korhonen et al., 1999; 2000; 2001). It will take time for polytechnic graduates and polytechnic degrees to acquire a reputation in the labour market and in trade and industry.

Table 4

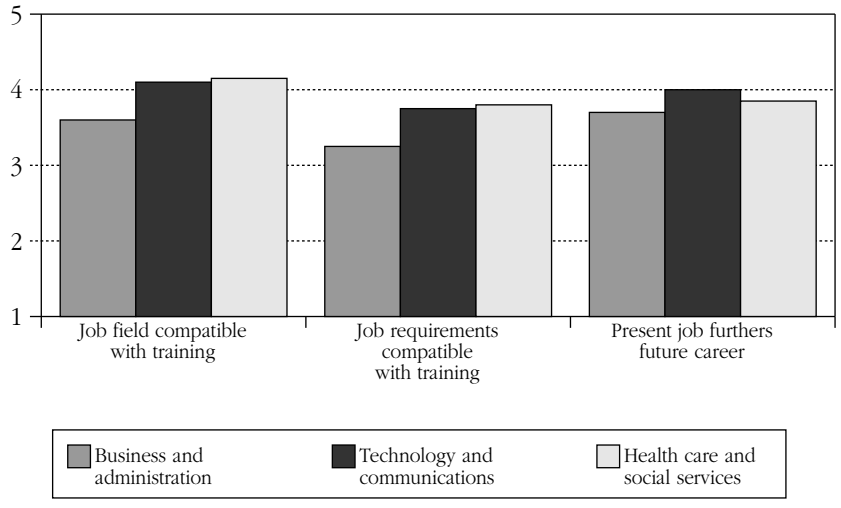
Status of a polytechnic qualification in the labour market compared to earlier college-level qualifications: do polytechnic graduates think they have gained or lost something?

Independent variables	Model 1	Model 2	Model 3
Study field			
Health care and social services	1	1	1
Business	14.73***	16.83***	16.41***
Technology	0.31***	0.31***	0.30***
Age			
Under 24		1	1
25 –27		1.29*	1.21
Over 27		2.54***	2.25***
Work experience			
Yes			1
No			1.31*
Classification percentage	76.9 %	79.5 %	80.1 %

* statistically significant at level p<0.05
** statistically significant at level p<0.01
*** statistically significant at level p<0.001

Figure 1

Polytechnic graduates' job satisfaction by study field



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Vocational training co-operation with the People's Republic of China

From bilateral to international cooperation – some German experiences

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This article recounts in detail the history of vocational training cooperation between Germany and the People's Republic of China.

It outlines the four phases of cooperation through which relations have passed and describes the obstacles to change which this type of undertaking has generally encountered. These include ethnocentricity, communication problems, difficulties in disseminating modest local successes, lack of continuity in policies and practices, political and cultural barriers. It also draws parallels with similar cooperation experiments between other western countries and China.

The article shows how difficult it is to sow the seeds of a dual training system in a country where a school-based vocational training system dominates. It also portrays the problems of China's characteristically curious combination of Confucianism and Soviet technocracy, particularly prevalent in the underdeveloped far west. These hamper the introduction of changes in the vocational training system which would give priority to ability rather than seniority and to broad training and key skills rather than narrow areas of specialisation.

Introduction

International exchange and cooperation in vocational education and training are gaining in significance even in once-isolated China. Globalisation is accelerating technological transformation and changing employment requirements all over the world. China's membership of the World Trade Organisation (WTO) is establishing high professional standards. These are imposing new and more rigorous demands on vocational training. International cooperation schemes in the area of vocational education and training facilitate adaptation to global expectations and promote economic and social development. The Federal Republic of Germany is one of China's chief international partners in vocational training. This year Germany and China can look back on 20 years of vocational training cooperation. A summary of some of the findings and results of Sino-German interaction and experiences with other parties identifies both development potential and the difficulties and obstacles in this area.

Learning from "Big Brother" or the "economic miracle"?

After the 1949 revolution, China learned from its *Big Brother*, the Soviet Union, for many decades.([1]) Soviet models and experiences still shape the Chinese vocational training landscape in the form of narrow occupational profiles, *work ethic* as a subject and *production schools*. This also explains its greatest weaknesses. Vocational training in China takes place almost exclusively in schools, without any appreciable involvement of enterprises. Outdated teaching methods which centre around monotonous lectures still dominate the academic routine. Theory-saturated learning and teachers who are remote from the real world of practice produce graduates who are only partially equipped to handle work-related and social tasks. The reform and liberalisation policy has prompted closer alignment to western models and experiences.([2]) The German dual system has been at the top of the list, being regarded as the invisible hand which triggered the *economic miracle* and the success of the West German economy in the international market. At the time people generally believed that China only needed to analyse how this "secret weapon" (*mimi wuqi*) worked and how to use it to be fully prepared for modernisation and the looming battles in the global market. Germany hoped that cooperation with China would popularise its vocational training model and thus boost its image, provide all-round political support for penetration of the Chinese market and create a well-qualified workforce for the Sino-German joint ventures which had been set up in the coastal regions.

The 1982 framework agreement put bilateral cooperation on an internationally

binding legal footing. Besides vocational education and training, development cooperation encompasses projects in environmental protection and resource conservation, poverty alleviation and advice on economic structures and legislation. The Federal Ministry for Economic Cooperation and Development (BMZ) provides most of the German funding. The largest implementing organisation by far is the federal Gesellschaft für Technische Zusammenarbeit (GTZ) GmbH. All cooperation projects are designed in joint planning workshops which respect partners' interests, and are evaluated regularly with standardised tools. Germany is chiefly involved in transferring know-how by providing long-term and temporary workers, organising further training initiatives and fact-finding missions in Germany, China and other countries, and supplying physical resources.

Various phases and experiences in the cooperation process

We can define four different phases in the development of cooperation projects.

1. Initial training projects

The first phase of cooperation focused on projects to train skilled workers. These paved the way for schemes to train master craftsmen and technicians. The welding technology centre in Harbin, the initial and further training centre in Tianjin serving a range of enterprises, and projects which imparted CNC and modern production technology skills ushered in the pilot phase of vocational training cooperation in the 1980s. However, it soon became clear that the model projects, with their significant material input, spotless workshops and ultramodern machinery, would not spread like mushrooms. After the economic restructuring which began in the 1980s and the bankruptcy of many state enterprises, it was simply impossible to inject the funding needed to establish and nurture a thousand new islands of perfection in a sea of mediocrity. All these cooperation projects ran for a limited period, and when German sponsorship ended and the experts returned home, some schemes went back to the level at which they had started. Often the few hundred well-qualified skilled workers from the cooperation projects were engulfed by the millions of other workers. It became necessary to create a new type of project with more sustainability and a wider impact.

2. Projects with a multiplier effect

Staff training initiatives therefore made way for initial and continuing training schemes for teachers, heads of schools and trainers. Teachers learned about modern teaching and learning methods and how to operate various media. Head teachers and administrative staff received opportunities to familiarise themselves with modern school management methods. Suddenly new alternatives were introduced to break the monotony of lectures. Pupils became active participants in lessons instead of mere passive recipients. Teachers discovered how to use group work and case studies, drafted plans for games and simulation and organised field trips and role plays. Basically, communication of learning by doing had begun. In-company training received special attention. The German four-step method and project and transfer-based learning (PETRA) entered Chinese enterprises and teaching workshops, at least those within the cooperation project's sphere of influence. The multiplier projects relied on teachers and trainers as catalysts in the innovation process. The sparks from glowing examples, effective methods and viable alternatives were intended to ignite a fire which would burst into an all-consuming revolution in learning methodology. However, obstacles soon surfaced here too. Initially, both pupils and teachers eagerly embraced and implemented innovations in learning processes. However, they often remained isolated models which were swamped by the general morass of ponderous structures and rigid organisation because the competent authorities did not promote their dissemination, either from lack of interest or from fear of innovation. After several years of cooperation, the question of how to design system structures and political decision-making processes became increasingly urgent. This soon generated a new kind of cooperation project.

([1]) For more information on the history of Chinese vocational training, see: Henze, Jürgen: *Berufliche Bildung des Auslands - Volksrepublik China*, Baden Baden 1989; ibid.: *Internationales Handbuch der Berufsbildung: Volksrepublik China* (German Institute for International Educational Research), Baden-Baden 1996; *Jiaoyu de gaige he fazhan* (Reform and Development of Vocational Training), Zhongguo jiankuang (Series: China - kurz und knapp), Beijing 1994; Li Luntian: *Zhongguo zhiye jishu jiaoyu jianshi* (Short History of Chinese Vocational Training), Beijing 1994; Münch, Joachim; Risler, Matthias: Stand und Entwicklungsperspektiven des beruflichen Bildungswesens in der VR China – pilot study, Berlin 1994; Risler, Matthias: *Berufsbildung in China - Rot und Experte*, Hamburg 1989.

([2]) For the rate of adoption of German practices in particular, see: Guo Yang, Lei Zhengguang, Wang Ling: "Zhiye jiaoyu zhong xin de jiao yu xue de fangfa" (New Teaching and Learning Methods in Vocational Training), *Youhua jiaoxue guocheng de tujing* (Ways to Optimise Learning Processes), Shanghai zhiye jishu jiaoyu yanjiusuo chuban (Regional Vocational Training Institute), Shanghai, pp. 34-44; Lei Zhengguang (ed.): *Deguo shuangyuanzhi jiaoyu moshi chutan* (Research into the German Dual System), Beijing 1992; ibid.: "Deguo PETRA jiaoxue fangfa yu nengli benwei zhiye jiaoyu" (The German PETRA Method of Transfer and Project-Oriented Training as a Skills-Based Vocational Training Model), *Youhua jiaoxue guocheng de tujing* (Ways to Optimise Learning Processes), Shanghai zhiye jishu jiaoyu yanjiusuo chuban (Regional Vocational Training Institute), Shanghai 1998, pp. 45-57; Jianli xiandai zhiye jiaoyu zhidu de taolun, Central institute for Vocational Training and the DSE, Beijing 1995 (Chinese Edition)/ Torwe, Eberhard (ed.): *Moderne Berufsbildung in China - Beiträge zum Dialog und Training* (published by the German Foundation for International Development – DSE – and the Industrial Occupations Promotion Centre – ZGB –). Magdeburg 1995 (German edition); *Zehn Jahre chinesisch-deutsche Zusammenarbeit in der Berufsbildung. Stand - Perspektiven*. Report on symposium in Hangzhou from 14 to 18 November 1994. The People's Republic of China State Education Commission in conjunction with the Hanns Seidel Foundation, Munich, and the Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ), Eschborn 1994.

3. System advice projects

The first system advice projects emerged in the early 1990s. By this time policymakers in China had realised that adapting the vocational training system to economic modernisation demands required more than a little cosmetic microsurgery. The main barrier to reform was the system itself. Ministries locked in bitter struggles over competences, rights to award qualifications and certificates, fragmented and confusing implementation responsibilities and the complete collapse of the former job allocation (*Fenpei*) system dominated the ravaged reform landscape during these years. The vocational training institutes in Beijing, Shenyang and Shanghai were founded during this period. Originally they followed the blueprint of the German BIBB (Federal Institute for Vocational Training). In time they acquired their own task profile, adapted to the Chinese context. This encompassed advice services for local and central political institutions and decision-makers, empirical surveys for labour market and skills research and business services, and continuing training activities for teachers and heads of schools. Many consulting services drew on both independent research and pilot project findings. Since the late 1990s another Sino-German initiative in this field has been working to harmonise examination standards for selected occupations throughout the country. It reports to the Employment Ministry.

The current phase of cooperation involves a new, multidimensional project, which brings together the various elements of the aforementioned schemes. It is vital to network existing service providers and create synergy effects.

4. Integrated programmes

Previously, models were often deprived of the institutional support they needed to catch on, while many central innovations were not based on practicable models and individual solutions. For example, this often occurred when new curricula were introduced that involved the drafting of new subject matter. Appropriate teaching and learning materials were not available, nor were teachers sufficiently familiar with the new content. Integrated programmes have now been designed to bridge this gap. They target several decision-making and implementing bodies simultaneously and link the various levels. This cooperation is not restricted to education and training projects. The economy's growing demand for trained workers and the strong social pressure caused by high unemployment are increasing the necessity of dovetailing economic development and employment promotion in the design of vocational training programmes. Skill-imparting job promotion schemes currently in the pipeline run on several levels and span all sectors. Support for the vast nation's underdeveloped western and central provinces plays a prominent role. Following the concentration of cooperation projects in the developed regions along the east coast in previous years, the potential developed there should now also be used to open up the western part of the country, which manifests significant development disparities.

Some results of Sino-German vocational training cooperation

Results of the longstanding cooperation are visible at various levels. The National Vocational Training Act, which the People's Congress passed in 1996, bears distinct "German traits". The same applies to the law on teachers passed several years before and to a range of local ordinances. Some sections of the 1996 legislation are closely related to the 1969 German Vocational Training Act. It includes provisions which stipulate that enterprises must be actively involved in vocational training and even impose sanctions on companies which evade their responsibilities. Unfortunately, however, it has not been possible to implement many provisions of this Act in the five years since its promulgation. This is another general problem in the hesitant process of "codifying" Chinese society, in addition to the sparse financial resources of often languishing state enterprises. Legislation and enforcement are frequently worlds apart. Many areas lack effective tools for implementing and monitoring the decrees and regulations that have been enacted.

Syllabuses, curricula and standardised examinations have drawn on German material and documentation to a large extent. Germany's broad-based occupational profile model has been particularly well received. However, implementation has met strong resistance due to the traditional focus on very narrow occupational profiles and highly specialised areas of activity. This still pervades large parts of the Chinese vocational training structure. Curricula based on occupational tasks have replaced the old, over-theoretical teaching plans. The traditional subject-based structure has given way to occupation-oriented learning. Many German school curricula have been adapted to Chinese requirements. For example, Chinese or international industrial norms have replaced German standards. In commercial training, Chinese business etiquette, bookkeeping and balance sheet regulations, distribution channels, etc. have taken the place of the corresponding German principles. Entire training modules have been developed and tested in pilot schemes for occupations new to China, such as industrial mechanics, electronic engineering and office communications. However, only the projects and the cooperating enterprises themselves have succeeded in organising in-company initial training in accordance with the high standards of German training regulations. Unfortunately, very few Chinese-based German firms and joint ventures are willing to conduct in-company initial training. Pilot projects have employed German PAL examination documentation, adapted to Chinese conditions.

In the area of learning processes, a wide range of action-oriented teaching and learning methods have been tested and disseminated via teacher training and model courses. Comprehensive material has been developed for learning via the "learning office". Case studies, class discussion instead of monotonous lectures, practical exercises, field trips and other forms of pupil-centred learning have aroused the interest of learners and teachers. Action-oriented learning methods have encouraged development of key skills such as problem solving, communication, teamwork and other vital social skills for the modern world of work which were hard to acquire through the prevailing traditional forms of learning. Numerous new teacher and student materials have been created to support action-oriented learning processes. Imaginative illustrated material for individual training courses is replacing traditional textbooks containing mountains of knowledge which pupils have to digest. This is simplifying and enlivening learning. Practice material and teaching aids round off the range of resources.

Computers are also playing an increasingly important part in cooperation. Projects to promote e-learning and distance learning are currently in preparation.

At another level of cooperation, modern empirical methods of labour market and training research have been disseminated. The necessary data, information and recommendations, founded on pertinent research and investigation, have been made available to policy-makers. The three vocational training institutes, for example, publish vocational training reports which summarise significant advances, track key trends and predict future patterns of development in specific fields. Sino-German cooperation has therefore had a sustained influence on the structure of Chinese vocational training. We must also mention cooperation in the area of career guidance. A mobile career advice system, incorporating an information bus in Liaoning Province in northern China, has pioneered new approaches and procedures.

Effects

Several empirical studies now exist on the long-term effects of German-inspired training projects. They have obtained varying results for different occupations and areas of activity. A longitudinal study([3]) concluded in 1999 focused on graduates of a three-year pilot training course for industrial mechanics completed three years before. The findings were rather sobering. Of the 46 course graduates, 15 were unemployed. The jobs of six others did not reflect the training they had received. Only very few of the remainder were really able to make the most of their broad skills. Of course, much of this development is related to the general decline in qualified skilled workers

([3]) Xu Ying, Hans-Günter Wagner, Gert Zinke: "Berufe deutscher Prägung in der VR China? Ergebnisse einer Absolventenverbleibsstudie im Rahmen eines Modellversuchs zur Ausbildung von Industriemechanikern nach deutschem Modell", *Zeitschrift für internationale erziehungs- und sozialwissenschaftliche Forschung / ZiesF*) 16 (1999) 1-2, pp. 287-302.

in the secondary sector. However, the same phenomenon is apparent elsewhere: improvements in work organisation, particularly in state enterprises, are not keeping pace with the speed of learning reform in the pilot projects. For as long as the division of labour remains so rigorous, there will be no demand for the versatility of broadly trained young skilled workers. The traditional, hierarchical thinking of a society influenced by Confucianism is also a factor. Young, flexible, skilled workers are simply *not allowed* to be better than an older journeyman or master craftsman, although in most cases the experience of the latter is limited to a narrow field of specialist functions and tasks. A study by Stockman et al.([4]) draws similar conclusions on the occupational level and employment status of dual training course graduates in the technical-vocational sector. However, the survey methods and evaluation procedures of this study are controversial.([5]) As far as the commercial sector is concerned, a survey of the progress of graduates([6]) conducted in Shanghai in 2000 revealed very positive findings. Apprentices who learned how to handle practical situations in a learning office proved capable of mastering a wide range of different commercial tasks creatively and imaginatively. Department managers assessed students trained in practical situations much more favourably than those taught along traditional lines. This demonstrated conclusively that modern teaching and learning methods often play a much more important role in improving training than modern facilities and expensive school equipment. As only small groups of graduates have been investigated to date, the current findings cannot be considered representative.

Compiling and evaluating the effects of guidance services is considerably harder than assessing the results of training projects. The complexity of the environment and the number of variables mean that these kinds of qualitative processes cannot be encapsulated in a linear cause-and-effect model. Most cases can therefore not be measured with the usual social science tools. The key evidence for the success of system advice projects lies in positive assessments by partners and the call for expansion of this field of cooperation, which would not be heard if such schemes were of little use.

Significant cooperation schemes with other bilateral and multilateral sponsors

For several years other European and non-European countries have been running vocational training initiatives in the "Middle Kingdom". Their activities are complemented by those of multilateral organisations. Below we take a brief look at major activities by other sponsors in this area.

Australia

Australia's technical cooperation is managed by the Australian Agency for International Development (*AusAid*). Current cooperation centres around a project to support the Chinese vocational training reform programme in Chongqing, which began this year and has a budget of A$18.4 million. For the first time a large group of Australian experts will work in the country on long-term contracts.

Canada

Canada is currently not running any vocational training projects itself. However, the standard Canadian Dacum model for developing curricula is greatly influencing the development of Chinese syllabuses.

Italy

This year Italy is running its first vocational training project in China. A technical unit from the Italian Foreign Ministry has just begun to implement a comprehensive training programme in Sichuan Province.

Japan

The JICA (Japan International Cooperation Agency), a corporation under public law, runs schemes particularly in the areas of automation technology and servicing, industrial design and information technology. JICA's training programmes are generally part of larger technical cooperation projects which are supported from the outset right through to evaluation. Japan sends trained staff and trains Chinese staff in China and Japan.

([4]) Stockmann, Reinhard, Wolfgang Meyer, Stefanie Krapp, Godehard Köhne: *Wirksamkeit deutscher Berufsbildungszusammenarbeit. Ein Vergleich staatlicher und nicht-staatlicher Programme in der Volksrepublik China*. Wiesbaden: Westdeutscher Verlag 2000.

([5]) See Wagner, Hans-Günter: review of the above, *Zeitschrift für Berufs- und Wirtschaftspädagogik (ZBW)*, No. 2 (2001), review section.

([6]) Wagner, Hans-Günter (with Angela Buch, Li Di, Xu Ying, Zhang Jiahuan): "VR China: Beschäftigungssituation von Absolventen kaufmännischer Ausbildungsgänge, die unter Heranziehung deutscher Erfahrungen gestaltet wurden – Ergebnisse einer empirischen Untersuchung", *Wirtschaft und Erziehung* 53 (2001), No. 7/8, pp. 232-236.

UK

The DFID (Department for International Development) implements British activities. While education and health are the main areas of cooperation, vocational training plays a subordinate role. Activities focus on basic education. However, the British certification and modular system has found some acceptance in China.

EU

Vocational training is one of the key fields of Euro-Chinese cooperation, forming part of a broad human resources development approach.

Several EU projects to improve the skills of employees in Wuhan and other parts of China have been operating successfully for some time. Initiatives for training young managers and for basic education in deprived areas are also in progress.

ILO

The International Labour Organisation works with the Chinese Ministry of Employment. This year the two institutions signed a cooperation agreement which includes training schemes in the area of work safety. The ILO International Training Centre in Turin will be responsible for implementation.

World Bank

China is the largest beneficiary of World Bank services. The Bank sponsors projects in almost all sectors. However, vocational training plays only a minor role. One scheme to establish model schools for vocational training reform ends this year. Since the 1991 education policy revolution, the World Bank has given priority to basic education and state general education over projects to upgrade vocational skills.(7)

Lessons learned

A wealth of mutual misunderstandings and conflicts plagued the beginning of the cooperation. Chinese counterparts were mainly interested in instant solutions for urgent problems but initially were most reluctant to question the value of their traditional system as a whole. The Germans sensed increased political prestige and a new market for their "star export", the dual system. They also hoped for better access to the Chinese market, using development aid as a "door opener". At the level of actual cooperation, the partners simply needed time to become acquainted. The pioneer spirit and missionary zeal of some advisors in the early stages were generally counterproductive. Not everyone who enjoyed high esteem among experts in Germany received a commensurate welcome here. However, the Chinese partners could also be difficult. A complex pattern of old managerial cadre influence and contacts, together with inefficient working methods, often hampered the implementation of joint projects. Problems tended to be viewed subjectively rather than analysed and addressed objectively. A unique combination of the Confucian doctrine of loyalty and democratic centralism, a legacy from eastern Europe, led to endless meetings and decision-making processes in which no real decisions were made. Extreme reluctance among the Chinese partners to take on complex tasks and responsibilities initially reduced progress to a snail's pace.

In time, patience and mutual tolerance helped draw the partners closer together. Initial successes in the area of training for skilled workers increasingly united those involved in carrying out common tasks. The willingness and ability to learn to listen and understand before offering comments and advice was the key to success both here and in other contexts. The long-term commitment of experts who work for many years with Chinese partners to achieve mutual project goals, guidance rooted in close personal relationships and precise knowledge of local needs are the hallmarks and strengths of German development aid. While the current trend lies in the opposite dierection in some European countries, others are beginning once more to exploit the high degree of effectiveness of this model of cooperation. For example, the first large contingent of long-term Australian experts will participate in the Sino-Australian vocational training programme which started several months ago in Chongqing. Australia is the second most important part-

(7) For details on other sponsorship activities, see Georg, Walter: *Analyse der Stärken und Schwächen der deutschen TZ auf dem Gebiet der beruflichen Bildung in der VR China* (Internal study by the Deutschen Gesellschaft für technische Zusammenarbeit – GTZ GmbH), Eschborn 2001.

ner in vocational training cooperation but has never before sent trained people to work in China.

Not everything which has been successfully tried and tested in Europe can be applied in Asia. Besides the German dual system, China has also profited in many cases from Australian and Canadian experiences. The DACUM handbook on curriculum development, with its user-friendly design and comprehensible methodology, has had much more influence on Chinese curriculum development than the German model with its confusion over who does what, its inertia and the wrangling about areas of responsibility in committees with equal representation of stakeholders. In the past, politics have meant that the geographical origin of an instrument has often played a larger part in the decision on whether it was used than its actual effectiveness and efficiency. Unfortunately, despite attempts to multilateralise EU development aid in China, harmonisation between the activities of different organisations cooperating in vocational training has only succeeded in certain areas. Potential synergy effects have therefore not yet been achieved.

Current practice shows that it has scarcely been possible to change the basic characteristics of the Chinese vocational training system. An established, school-based vocational training system cannot be converted into a company-based or dual system overnight, even when pilot projects show that different arrangements may produce better-qualified graduates in the long term. Vested interests are particularly powerful in the Chinese education system. There is no shortage of attempts to give enterprises more responsibility for training, however. At a national vocational training conference in July 2001, the State Council itself laid the foundations for reform and called on the ministries involved to commit themselves to more efficient cooperation. Prime Minister Zhu Rongji urged delegates to base vocational training more strongly on market demands and especially to make a concerted effort to reintegrate unemployed people into the labour market. The State Council proposed that enterprises should have greater obligations and that in future the state's role should be restricted to supervision.([8])

Developments to date, however, have shown that implementation of such principles is very slow. Mounting cost pressure, stemming chiefly from China's membership of the WTO, leaves enterprises very little financial scope to organise their own training courses. Moreover, the vocational schools themselves want to retain their effective monopoly on training because their existence is guaranteed by being entrusted with that task by the state, and by the resultant school fees. Nonetheless, several new developments are emerging. The first independent chambers of trade and industry in Shanghai and Shenzhen have already started to devise their own examination criteria, as national standards do not reflect their skill demands. But these new trends are still in their infancy. State education authorities and industry agencies continue to dominate the certification sector. The internal dynamics of bureaucratic machines still have the upper hand over the budding forces of market-oriented solutions.

To date neither German nor other cooperation projects have managed to change the school-based focus of the Chinese vocational training system. However, it is possible to improve individual courses within the rigid basic structures. Where enterprises categorically refuse to cooperate, vocational training has to be provided in schools, which can use learning offices or simulation, for example. Revolutionising teaching and learning methods also has great innovative potential. Learning by doing not only improves learning achievements and prepares students more effectively for complex working situations, but it also develops decision-making skills and democracy, thereby creating a better climate for associated long-term social restructuring.

New focus: development in the west

Promotion of vocational training in the western provinces of China is a vital aspect of future vocational training cooperation. In October 2000 the Chinese central government approved a comprehensive bundle of measures to develop the west of the country. It was subsequently enhanced by an educational *action plan.*

([8]) see: Tai Dian: "Nation to reform vocational education", *China Daily,* 30 July 2002, p. 3.

Table

History of Chinese vocational training since adoption of the reform and liberalisation policy

Year	Event	Effects
1978	National education conference	Directive from Deng Xiaoping: Education must serve economic development. Increase in proportion of vocational schools, especially in rural areas
1980	Vocational training structural reform	The first state regulation on the restructuring of middle and higher vocational education after introduction of the liberalisation policy. Increase in the proportion of vocational training, which rose from 2% to 40% in just a few years
1985	Decision of the Central Committee on vocational training	Gradual introduction of a vocational training system with better interchangeability with general education
1993	Adoption of the law on teachers law by the National People's Congress	Uniform regulations for teacher training
1993	Central Committee and State Council: Guidelines for the development of vocational training	Promotion of enterprise involvement in vocational training; Finance Ministry regulation of vocational training funding
1995	State Council: Adoption of standardised regulations on teacher trainingqualifying teachers	Standardisation of requirements for teachers at the various levels of vocational training
1996	Passing of the People's Republic of China Vocational Training Act	Regulations on involvement of enterprises in vocational training and on establishment of private educational institutions
1999	2000 action plan and national education conference	Measures to improve teacher skills and vocational training as part of the development of western China
2002	National vocational training conference	Directive from the State Council: Vocational education and training to be oriented towards the labour market; long-term reduction in the role of the government in school supervision; improved cooperation between participating institutions

Lack of education and training is one of the main reasons for the halting development in western China. Besides promoting basic education and distance learning, the education sector is focusing on training schemes to boost employment by improving skills. Initiatives encouraging individuals to start up in business are crucial in this context. Available findings from the coastal regions are ambivalent. Many self-employment courses in vocational schools target 16 to 18-year-old students in the hope that at least some will escape joblessness when they leave school.([9]) To date no precise findings exist on the effect of such courses in the initial vocational training sector on employment figures. Continuing training and retraining tell a different story. A Sino-German project in Nanjing also aims to promote self-employment among jobless women. Employment office statistics on the situation of pilot training project graduates show a business founding rate of 91% one year after completion of the course.([10])

Future cooperation projects for developing western China can build on and multiply the findings of existing cooperation in the developed coastal regions in many ways. This also has implications for development policy with regard to such projects. Decades of cooperation have resulted in the training of numerous skilled Chinese workers at home and abroad. New projects therefore require the presence of very few western experts. Jointly developed curricula and teaching materials are available for many occupations and fields of activity. These could now be exploited in the underdeveloped west of the country.

Just as in the coastal region projects in the past, cooperation with commerce and industry, success will depend largely on knowledge of company practices and their integration into curricula, teaching materials and examination requirements. This involves both a focus on specific, relevant, practical skills and know-how, and awareness of long-term developments as a basis for the development of key courses. In the past projects concentrated on the initial training sector. The acute pressure of high unemployment will push continuing training into the spotlight. More jobs tend to result from short-term training programmes than from complex initial training schemes. German development aid is leading vocational training to abandon its role as an independent field of cooperation and to acquire a new status as an element of economic and employment development projects, and of rural structural policy and poverty relief.

([9]) see: Liu Junfang: *Chuangye jiaoyu de lilun yu shijian yanjiu* (Research on Theory and Practice of Education for Self-Employment), (Dizhi Chubanshe). Beijing 2002.

([10]) Report by Nanjing Department of Employment and Social Affairs on the monitoring of GTZ project progress, September 2002, p. 3.

Europe International

Information, comparative studies

Learning and training for work in the knowledge society: the constituents' views: report IV.
Geneva: ILO, 2003 - (International Labour Conference ; 91st Session 2003, Report IV)
ISSN 0074-6681
http://www.ilo.org/public/english/standards/relm/ilc/ilc91/pdf/rep-iv-2.pdf

The Conference, which is often called an international parliament of labour, has several main tasks : first, there is the crafting and adoption of international labour standards in the form of Conventions and Recommendations. The Conference also supervises the application of Conventions and Recommendations at the national level. The Conference is also a forum where social and labour questions of importance to the entire world are discussed. This report contains: list of abbreviations; introduction; replies received and commentaries, proposed conclusions.
knowledge society; vocational training; training legislation; human resources management; lifelong learning

Beyond rhetoric: adult learning policies and practices.
Paris: OECD, 2003. - 276 p.
Organisation for Economic Co-operation and Development - OECD
ISBN 9264299432.

Adults with busy lifestyles, whatever their education level or employment situation, may well ask why they should resume learning. The reality is that the changing requirements of knowledge-based societies, skill shortages and the increasing importance of civil participation and social cohesion drive the need to continually update adults' skills and knowledge. Yet those who are most in need are often precisely the ones who participate least in adult learning and training programmes. This publication aims to identify what works in the policy and practice of adult learning, drawing on the experience of nine OECD countries: Canada, Denmark, Finland, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom (England). It defines the features of a desirable system of adult learning, including ways to motivate adults to learn and methods to deliver appropriate services. Some countries rely more on individual incentive mechanisms; others use national strategies and public supply; still others apply measures to encourage the private market. This book will be indispensable to policy makers and those involved in the practice of adult learning.
adult learning; access to education; knowledge society; skill shortage; OECD countries.

Financing education: investments and returns: analysis of the world education indicators: 2002 edition.
Paris: OECD, 2003. - 232 p.
Organisation for Economic Co-operation and Development - OECD
ISBN 9264199713

This volume is the third in a series of publications that seeks to analyse the education indicators developed through the OECD/UNESCO World Education Indicators (WEI) programme. The volume examines both the investments and returns to education and human capital. It begins by looking at the results of a specially commissioned study of the impact of human capital on economic growth in WEI countries which shows new findings relative to those found in studies of OECD Member states. It also sets out the context for trends in educational attainment as well as current levels of educational participation and expenditure in WEI countries. The report addresses the financing of education systems by examining spending and investment strategies in WEI countries from both public and private perspectives. It looks at the rationale for public spending, how public resources are distributed across levels of education and the role of the private sector both as a provider of educational services and a source of educational expenditure. A na-

This section has been prepared by
Anne Waniart,
and the Documentation Service with the help of members of the national documentation network

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.

tional statistical profile that sets out selected contextual and finance indicators against both OECD and WEI benchmarks, together with a comprehensive statistical annex covering both WEI and OECD countries, complements the analysis. The countries participating in the OECD/ UNESCO WEI programme are: Argentina, Brazil, Chile, China, Egypt, India, Indonesia, Jamaica, Jordan, Malaysia, Paraguay, Peru, the Philippines, the Russian Federation, Sri Lanka, Thailand, Tunisia, Uruguay and Zimbabwe
economics of education; financing of education; financing of training; government policy; economic development; cost benefit analysis; educational administration; public finance; private education; OECD countries.

Labour market and social policies in the Baltic countries.
Paris: OECD, 2003. - 181 p.
Organisation for Economic Co-operation and Development - OECD
ISBN 9264100067

The Baltic States - Estonia, Latvia and Lithuania - have made impressive progress since the early 1990s. They have now almost completed their preparations for accession to the EU. Most elements of labour market and social policy have been thoroughly reformed over the past decade. However, several difficult policy questions need to be addressed in response to changing economic conditions. This OECD Policy Review analyses the key issues facing each country given its specific economic and social trends. It draws both positive and negative policy lessons from OECD experience. It also identifies Baltic policy initiatives, such as pension reforms, which are more advanced than those adopted in most OECD countries. Facing high unemployment, modest incomes and more unequal income distributions than many European countries, Baltic policy makers have limited room for manoeuvre. In employment policy, a paramount goal must be to improve the institutional framework for innovation and job creation. Social spending needs to be contained because taxes and social insurance contributions are relatively high, placing a heavy burden on employment. This report provides detailed information and policy recommendations in five topical areas: labour law; 'active' and 'passive' labour market policies; pension reform; long-term care of the elderly; and social assistance benefits as a last resort.
economic development; labour market; social policy; socio-economic conditions; employment policy; labour legislation; retirement; Baltic States; Estonia; Lithuania; Latvia.

Content Village. eLearning resources.
Luxembourg: Content Village, [2003]-...
URL: http://www.content-village.org/articles.asp?id=147

The Content Village is a service funded under the European Community 'eContent' programme - a market oriented programme which aims to support the production, use and distribution of European digital content and to promote linguistic and cultural diversity on the global networks. The overall objective is to disseminate and promote existing best practice and results of the eContent programme to all interested parties in the digital content and language industry, and the public sector. The Content Village information assets and functionalities already in place include: detailed fact sheets of all Community funded eContent projects highlighting the latest project results; featured articles and numerous background references on major eContent topics ....
eLearning; electronics industry; training information; eContent programme; EU countries.

Countdown: the challenge of the European Union's eastern enlargement
Vienna: WIIW, 2003-
Wiener Institut für Internationale Wirtschaftsvergleiche - WIIW
URL: http://wiiwsv.wsr.ac.at/countdown/

Countdown is an online information, documentation and communication centre on the European Union's eastern enlargement. Countdown - an EU-Interreg II/C-Project, co-financed by the City of Vienna and the Federal Chancellery of Austria - is run by the Vienna Institute for International Economic Studies (WIIW) and is based on an international network of co-operating institutions in the associated countries and member countries of

the European Union. Countdown was created with the intention to help fill the huge information and communication gap that still prevails in this research field.
enlargement of the Community; information service; Eastern Europe.

Erweitertes lebenslanges Lernen im internationalen Vergleich / Günter Dohmen. [Enhanced lifelong learning: an international comparison].
Chemnitz: Bildungsforum Südwestsachsen, 2003. - 21 p.
URL: http://www.tu-chemnitz.de/phil/ebbw/bf/files/dohmen.pdf

Speech on international lifelong learning issues, with focus on recognition of non-formal/informal/prior learning.
lifelong learning; comparative analysis; non formal learning; informal learning; EU countries; OECD countries.

Finanzierung von Weiterbildung und lebenslangem Lernen: Dokumentation der Konferenz des Forschungsinstituts für Bildungs- und Sozialökonomie am 8. und 9. April 2002 in Köln / Günther Dohmen und Birgitt A. Cleuvers (Eds.).
[Financing of continuing education and lifelong learning: proceedings of an international conference held in Cologne in April 2002.].
Bielefeld: W. Bertelsmann Verlag, 2003 - (Schriften zur Bildungs- und Sozialökonomie ; 2)

Continuing training and lifelong learning are gaining importance. Financing concepts such as learning accounts, training funds, vouchers, shared financing through levies, taximeter or integrated models have been discussed and tested at international level for many years. In Germany the examination of different models for the financing of education have become more urgent than ever in view of the planned reforms and the targeted goal of bringing about a sustainable improvement of the education system and educational opportunities.
financing of training; financing of education; lifelong learning; continuing vocational training; comparative analysis; economics of education; EU countries; Asia.

Fit for Europe.
Nuremberg: Bundesanstalt für Arbeit, 2003-
URL: http://europe-online.universum.de/frame.pl

Fit for Europe offers information on vocational training and work in all EU countries in seven languages, important addresses and links and a language test in 11 languages. It is a project supported by the EU under the Leonardo da Vinci programme.
guidance service; educational guidance; vocational guidance; EU countries.

Kompetenz für die Zukunft: Ausbildung und Lernen in Europa: Zweiter Bericht des Cedefop zur europäischen Berufsbildungsforschung / Manfred Tessaring
[Competence for the future: Training and Learning in Europe: Second Cedefop Report on European Vocational Training Research]
In: Politische Perspektiven beruflicher Bildung = Political perspectives of vocational and occupational education and training, p. 123-136 (2003). - Bielefeld: W. Bertelsmann Verlag, 2003 - (Meilensteine der beruflichen Bildung = Milestones of vocational education and training ; 3)
ISBN 3-7639-3017-5

This chapter presents information about the second research report on VET in Europe, which was published in 2001. The leitmotif is the concept of 'competence'. This very comprehensive report consists of five parts; its themes and authors are presented in an appendix to this chapter.
training research; skill; Community policy; Cedefop; EU countries.

Research and policy in open and distance learning: proceedings of the second research workshop of EDEN.
Budapest: EDEN, 2003. - 240 p.
European Distance Education Network - EDEN

This study provides an overview of the current situation and future challenges for the development of international cooperation for Open and distance learning in Europe.
distance study; open learning; eLearning; international cooperation; Europe.

Systeme des Leistungsbezugs bei Arbeitslosigkeit: ein zwischenstaatlicher Vergleich / Heinz Werner, Werner Winkler.
[Systems of unemployment benefits: an international comparison].
In: IAB Werkstattbericht 4 (2003). - Nuremberg: IAB, 2003. - 45 p.
Institut für Arbeitsmarkt- und Berufsforschung - IAB
ISSN 0942-1688
URL: http://www.iab.de/ftproot/wb0301.pdf

First, the term unemployment is defined, followed by an overview of active and passive labour market policy (unemployment benefit). This is followed by a cross-country comparison of criteria for unemployment benefit. In the Annex, a detailed description of each country is given on the basis of the selected criteria: Denmark, Germany, France, Canada, Netherlands, Austria, Sweden, Switzerland, United States, United Kingdom.
unemployment benefit; comparative analysis; social security; employment policy; EU countries; United States; Switzerland.

European Union: policies, programmes, participants

Council resolution of 19 December 2002 on the promotion of enhanced European cooperation in vocational education and training / The Council of the European Union.
In: Official Journal of the European Communities C 13, p. 2-4 (2003). - Luxembourg: EUR-OP, 2003
URL: http://libserver.cedefop.eu.int/vetelib/eu/leg/res/2003_0013_en.pdf

With this resolution the Council reaffirms its commitment to enhanced cooperation in vocational education and training in order to remove obstacles to occupational and geographic mobility and promote access to lifelong learning. It also states that further cooperation in vocational education and training should be enhanced by the actions and policies developed primarily on the basis of the report on the 'Concrete future objectives of education and training systems' taking into account the Resolution on Lifelong learning, but also within the European Employment Strategy. Moreover the Council acknowledges that the priority should be given to the following: European dimension; transparency, information and guidance; recognition of competences and qualifications; and quality assurance.
training policy; training partnership; educational policy; international cooperation; European dimension; transparency of qualifications; recognition of competences; recognition of diplomas; vocational guidance; EU countries.

Elearningeuropa.info portal.
Barcelona: PAU Education, 2003-
European Commission
URL: http://www.elearningeuropa.info/

The purpose of the portal is 'to act as a virtual meeting place and directory of information for all aspects of e-learning'. This website offers useful information about the principal initiatives: the important programmes that offer economic assistance and the various projects, institutions and resources operating and being developed throughout Europe.
eLearning; training information; training programme; training institution; EU countries.

The future of the European Employment Strategy (EES) "A strategy for full employment and better jobs for all": communication from the Commission to the Council, the European Parliament, the Economic and Social Committee and the Committee of the Regions / Commission of the European Communities.
Luxembourg: EUR-OP, 2003. - 23 p. - (Documents COM ; (2003) 6)
ISSN 0254-1475
URL: http://libserver.cedefop.eu.int/vetelib/eu/leg/com/com_2003_0006_en.pdf

The purpose of this Communication is to present an outline for the revised strategy complemented by examples of existing concrete objectives and targets and considerations and suggestions for possible new targets. This will offer the basis for an open discussion with all interested parties, especially the Member States, the European Parliament, representative or-

ganisations of the Social Partners and the civil society. The Commission will make a formal proposal on Employment Guidelines and Recommendations, leading to their adoption by the Council at the end of the first semester 2003.
employment policy; social partners; employment monitoring system; EU countries.

Change in European education and training systems related to information society technologies / European Distance Education Network.
Budapest: EDEN, 2003. - 112 p.
European Distance Education Network - EDEN
ISBN 1-898253-53-6

This study provides an overview of the current situation and future evolutions and challenges for the development of quality eLearning in Europe. Market strategies, policy impact, innovative practices and research developments relevant to the issue of innovation in education and training are the main themes addressed by the report, which is the main result of the first year of activity of the European Union, DG Information Society funded 'L-change' Project.
educational innovation; training innovation; eLearning; technological change; Europe.

Contribution by national social partners to the Luxembourg Process / European Association for Territorial Excellence.
Brussels: Eurexter, 2003. - 65 p.
URL: http://europa.eu.int/comm/employment_social/news/2003/jan/coparso_en.pdf

The topic of the project consists firstly of a discussion of around twenty initiatives in favour of employment in twelve Member States, jointly presented by local social partners in view of familiarising the French social partners with developments in other Member States. This approach intended to involve the social partners as major players in the European Employment Strategy (EES) and to strengthen the territorial component of the Strategy at regional and local level. The participants propose to extend such an approach to other Member States, focusing on specific subjects of the EES. Secondly, important themes for the social partners at national level were discussed on the basis of the respective National Action Plans for employment (NAPs), namely with regard to youth and long-term unemployment as well as initial and continuing training and questions of work organisation. This experimental network comprised social partners from Germany, Spain and France, who in turn selected social partners from two or three other Member States. This exchange of view fostered a better mutual understanding by the social partners of the NAP exercise in different countries. Finally the project presents conclusions on the lessons learned, the interpretation of the EES by participants, and possible improvements and prospects of dissemination of the methodological approach taken in this project.
employment policy; social partners; local planning; EU countries.

Multiannual work programme of the social partners / European Commission.
Brussels: European Commission. Directorate General for Employment and Social 2003. 2 p.
URL:http://europa.eu.int/comm/employment_social/news/2002/dec/prog_de_travail_comm_en.pdf

At the Social Dialogue Summit in Genval on 28 November 2002 the social partners presented their joint multi-annual work programme. It identifies themes of common interest for employers and workers, which the social partners intend to treat from 2003 to 2005. The actions will be based on a large spectrum of diversified instruments and will be grouped around the priority areas of employment, enlargement and mobility.
social partners; social dialogue; EU countries; work programme.

The future of the European Employment Strategy: EES / European Commission.
Brussels: European Commission- Directorate-General Employment and Social Affairs, 2003. - 23 p.
URL: http://libserver.cedefop.eu.int/vetelib/eu/pub/commission/dgesa/2003_0001_fr.pdf

The European Commission issued a Communication on 14 January 2003, outlining a new, more operational European Employment Strategy (EES) to confront new challenges such as a more rapid rate of economic change, ageing populations and enlargement. The Commission proposes three basic objectives for the future strategy, in line with the Lisbon reform agenda: full employment, the promotion of quality and productivity at work (better jobs), and fostering cohesion and an inclusive labour market. The Commission also proposes better governance of the EES, especially through more involvement of social partners and civil society and streamlining of the strategy with other EU policy co-ordination processes such as the broad economic policy guidelines. This policy paper is intended to provoke a broad discussion about the future shape of the EES in the run-up to the EU's Spring Summit.
employment policy; social partners; employment monitoring system; EU countries.

Open and distance learning in Europe and beyond: rethinking international cooperation / European Distance Education Network.
Budapest: EDEN, 2003. - 595 p.
European Distance Education Network - EDEN

This study provides an overview of the current situation and future evolutions and challenges for the development of international cooperation for Open and distance learning in Europe.
distance study; open learning; eLearning; international cooperation; Europe.

Vade-Mecum: textes officiels internationaux concernant les langues moins répandues en Europe / rassemblés par Emese Medgyesi.
[Official international texts on minority languages in Europe – compiled by Emese Medgyesi]
[3rd. ed.]- Brussels: EBLUL, 2003. - 508 p. - (Documents BELMR ; 4)
ISBN 2960034112

This volume presents international documents on the languages and cultures of European linguistic minorities, of which over forty are currently represented in BELMR. The addresses of the Internet sites are also listed [extract].
language; minority language; Community policy; language; EU countries.

Lisbon strategy: time is running out, action needed now / UNICE .
Brussels: UNICE, 2003. - 20 p.
Union of Industrial and Employers' Confederations of Europe - UNICE

UNICE's assessment of the performance actually achieved in meeting the commitments of the Lisbon summit in Spring 2000, and the efforts needed to maintain the momentum for the agreed deadlines, is contained in a 20-page report whose message is conveyed by its subtitle:- "Time is running out, action is needed now. UNICE urges policy-makers to foster entrepreneurship in Europe, to ensure that innovation takes place, to unlock the real power of the single market, to support the quality of the workforce, and to strive for sustainable development".
entrepreneurship; economic policy; employment policy; EU countries.

European Information Technology Observatory 2003 / by EITO
Frankfurt: EITO, 2003. - 400 p. + CD-ROM
European Information Technology Observatory - EITO

"From the very beginning the EITO has been strongly supported by the Directorate General III Industry of the European Commission, and since 1995 by the Directorate for Science, Technology and Industry of the OECD in Paris. The EITO has been produced with the support of the EITO sponsors, the trade fair SYSTEMS in Munich, and the EITO company sponsors Deutsche Telekom, Telecom Italia and Interpro".
information technology; market; trend; forecasting; computer industry; information society; EU countries; .

From the Member States

D Die Lehr-Lern-Perspektive [The teaching-learning perspective]
Frank Achtenhagen, Ernst G. John.- Bielefeld: W. Bertelsmann Verlag, 2003. - 480 p. - (Meilensteine der beruflichen Bildung = Milestones of vocational education and training ; 1)
ISBN 3-7639-3015-9

This volume provides a comprehensive overview of the current state of German and international vocational training research in the areas of teaching and learning. This includes research projects in the framework of the occupation-related DFG priority programme, the European COST Action A11 'Transferability, flexibility and mobility as targets for vocational education and training', and the nationwide US programme 'How People Learn'. Main research issues and corresponding findings from other European countries or from the Pacific area are also presented. The topics include self-organised learning, socio-cultural learning, mastery learning, enterprise visits, problem-solving action, questions of learning with media, etc. Topics of current interest are presented and appraised by the discussion partners.
training research; vocational training; teaching; learning; training development; Germany.

Politische Perspektiven beruflicher Bildung
[Political perspectives of vocational and occupational education and training]
Frank Achtenhagen, Ernst G. John. - Bielefeld: W. Bertelsmann Verlag, 2003. - 411 p. - (Meilensteine der beruflichen Bildung = Milestones of vocational education and training ; 3)
ISBN 3-7639-3017-5

This volume gives an overview of current topics in vocational education and training policy. It includes selected research findings from the Social Research Institute, from the Federal Institute for Vocational Training (BIBB), from Cedefop's work at European level, and from the NCRVE in the US, all of which deal with structural change in the working world and the resultant change in qualification requirements, new occupations in the services sector, additional skills, etc.. The volume also gives a detailed report of the statements and debates of an international high-level panel, which included the Federal Minister for Education, Ms. Bulmahn among its members.
training policy; vocational training; vocational education; training research; training development; Germany.

DK The Danish FoU Programme: innovation and development of the Danish VET system: a case of good practice / Pia Cort [et al.].
Frederiksberg: DEL, 2003. - 41 p.
Cort, Pia; Danmarks Erhvervspædagogiske Læreruddannelse - DEL

In 1999, the Danish VET system received the Bertelsmann Prize for its innovative capacity. One of the factors underpinning the system's capacity for ongoing renewal is the Danish Innovation and Development Programme (Forsøgs- og Udviklingsprogram – FoU). Via this programme, innovation and development activities have been made an integral part of the daily practice of the Danish vocational colleges. This publication describes the programme, the legislative framework, and its contribution to teacher competence development, school development and system development. FoU is presented as a case of good practice in which other countries in Europe may find elements of inspiration.
research programme; training system; vocational training; training reform; professionalism; vocational teacher; school; research development; Denmark.

De gymnasiale uddannelser: redegørelse til Folketinget / Undervisningsministeriet.
[Upper secondary education: statement to the Danish Parliament].
Copenhagen: UVM, 2003. - 73 p.

ISBN 87-603-2288-8
URL: http://pub.uvm.dk/2003/gym/

In June 2002, the Danish Government published its action plan for "Better Education". A central element of this plan was to strengthen the overall academic level of the Danish education programmes from basic schooling to higher education. This publication describes the Government's proposal for a reform of the general upper secondary education programmes (Gymnasium), the higher preparatory examination (HF), and the vocationally oriented upper secondary education programmes (hhx and htx). The most comprehensive changes are proposed for the two first programmes, whereas only structural changes are proposed for the programmes of hhx and htx. The aim of the reform is primarily to strengthen the academic level of the programmes and the qualification of students for further studies at the universities. Furthermore, issues such as clear objectives for teaching, new examination forms, interdisciplinary teaching, and student activation are central features of the Government proposal.
upper secondary education; educational reform; skill; learning strategy; examination; student; Denmark; work programme

Kompetence [Competence] / Undervisningsministeriet.
In: Uddannelse 1, 56 p. (2003). - Copenhagen: UVM, 2003
ISSN 0503-0102
URL: http://udd.uvm.dk/200301/index.htm?menuid=4515
Undervisningsministeriet - UVM

In this issue of "Uddannelse", the focus is on the concept of competence and how it has developed since it was discussed in a previous issue of "Uddannelse" in 1999. Since then, the concepts of competence and competence development have entered the Danish language and are today more used than qualifications and qualification analyses. In the first article, a historical approach to the concept is taken. The article shows how the concept of competence has outdone the concept of qualification, and why this is the case. In the other articles, the concept is dealt with from individual, organisational, national and international perspectives.
skill; educational policy; personal development; assessment of competences; culture; qualification; Denmark.

GR Vocational Training Dynamic Development with a European perspective: organisation of Vocational Education and Training - OEEK / OEEK
Athens: OEEK, 2003. - 6 p.

The Organisation for Vocational Education and Training (Organismos Epangelmatikis Ekpaidefsis kai Katartisis - OEEK), is the agent that plans, organises, operates and supports the Initial Vocational Trailing in Greece. It has administrative and economic independence and is supervised by the Ministry of National Education and Religious Affairs. Furthermore, it establishes and manages all 130 Public Vocational Training Institutes operating in our country and supervises the 65 private Vocational Training Institutes.
training development; training institution; curriculum development; recognition of diplomas; certification of competences; Greece

IRL Sustaining progress: social partnership agreement 2003-2005 / Government of Ireland.
Dublin: Stationery Office, 2003. - 123 p.
ISBN 0-7557-1550-0
URL: http://www.taoiseach.gov.ie/upload/publications/2123.pdf

This publication is the sixth in a series of agreements between Government and the social partners to ensure industrial peace and progress in a period of economic uncertainty. It follows the previous Programme for Prosperity and Progress of 2000. Part one of the document sets out the overall scope of the Agreement, together with the ten special initiatives to be progressed in the lifetime of the new Agreement. It outlines the engagement with the social partners on these initiatives and also the wider policy framework encompassing macroeconomic policy, economic development and prosperity and delivering a fair and inclusive society. Part two sets out the terms of the draft interim pay agreement and addresses a number of related issues, including the draft minimum wage, workplace partner-

ship and industrial relations issues. It contains a wide range of measures aimed at, among other things, protecting employees' rights, improving skills through workplace learning, supporting training for people with disabilities, supporting work/life balance programmes and developing integrated policies for migrant workers.
collective agreement; social partners; incomes policy; economic development; social integration; in service training; disabled worker; migrant worker; Ireland.

A framework for quality in Irish universities: meeting the challenge of change / Conference of Heads of Irish Universities.
Dublin: CHIU, 2003. - 80 p.
URL: http://www.chiu.ie/Quality.pdf

In Ireland, as in many other countries, there has been a massive growth in the numbers of learners participating in higher education in recent decades. There has also been a corresponding increase in the diversity of the student population, accompanied by the need for innovative responses from the providers of higher education. The seven Irish universities have made significant changes in their culture, management, use of resources and how they approach their core functions of leaning and teaching, research, and service to the community. This publication marks an important stage in the evolution of a framework for quality based on the collaborative efforts of the seven universities. The establishment of the Irish Universities Quality Board further consolidates the implementation of a systematic approach to quality improvement. This publication illustrates the procedures that will be used in undertaking quality assurance reviews within universities, and in the follow-up to those reviews. Designed to encourage debate, the publication is integrated with other resources including a proposed dedicated website and an annual conference on a quality-related theme.
university; quality management; Ireland.

P Avaliação da formação: glossário anotado. / Zelinda Isabel Jorge Cardoso [et al.].
[Evaluation of training: annotated glossary]
Lisbon: INOFOR, 2003. - 116 p.
ISBN 972-8619-47-2

In publishing this glossary the authors aim to help pave the way for the emergence of an evaluative culture in organisations and to contribute to a classification of existing evaluative practices. The also aim to provide users with the means of reflecting on the evaluation of vocational training. It is their intention that this glossary contribute to the establishment of standard terms used in the evaluation of training.
training evaluation; terminology; Portugal.

Dimensão social e imigração: / Departamento de Estudos, Prospectiva e Planeamento
[Social dimension and immigration]
DEPP - Oeiras: Celta Editora, 2003. - 165 p. - (Cadernos Sociedade e Trabalho ; 3)
ISBN 972-704-227-9

No 3 of this series, which has just been issued, is a compilation of documents and statements produced during a seminar organised for the presentation of the report 'The social situation in the European Union 2002'. It specifically deals with geographical mobility, and the interaction between the different models of mobility (the pendulum movements of migration) and the European social fabric. One important conclusion drawn in the discussion of 'Social dimension and immigration', concerned the key role of education and training in economic and social integration. Giving immigrants and their children access to education, especially those with low levels of qualification or schooling, creating appropriate job opportunities and removing barriers in the search for housing are the essential means by which the full integration of immigrants in the economy and society of their host countries can be achieved.
labour market; migrant integration; migrant training; social discrimination; social integration; social mobility; social structure; Portugal.

Formação Profissional na Europa: cultura, valores e significados / Coord. Eduardo Álvaro do Carmo.
[Vocational training in Europe: culture, values and essential features]
Lisbon: INOFOR, 2003. - 275 p. - (Novos formadores)

The VET FORUM network was set up in 1994 as a non-formal discussion area by researchers from various scientific fields dealing with human resources, employment and social exclusion. Since 1998 it is being financed by the Fourth Framework Research Programme of the European Union. The main purpose of this network is to present a platform where questions relating to human resources and their role in the economic and social development of the EU and its Member States can be discussed. Secondly, it will also contribute to the development of a European Community of research, multicultural and trans-disciplinary in nature, which will promote the European dimension of vocational education and training. This document, published by VET FORUM, deals with four thematic issues relating to training: 'Culture, values and essential features', 'Changing the relationship between education and work', 'Strategies for the evaluation of programmes' and 'Challenges to research and considerations'. The texts contain reflections on each one of these themes and include various perspectives and models. The aim of this publication is to open debates on vocational education and training, to offer greater knowledge of the subject and to function as a reference document for the development of human resources.
culture; entry into working life; evaluation; curriculum development; Europe; Portugal.

UK Evaluation of the skills development fund / a research brief by GHK for DfES.
Norwich: HMSO, 2003. - 101 p.
ISBN 1-84185-820-x

The Skills Development Fund was used to support the work of the Regional Development Agencies (RDAs) in raising the regional skills base. The aim of the evaluation was to assess the impact of the SDF to date, in terms of the types of activities supported, the outcomes achieved, and the extent to which SDF funded projects were responding to the needs of employers and contributing to regional economic development.
skill development; training allowance; regional and local authority; training evaluation; local planning; United Kingdom; England.

Supporting access to ICT for BME groups in deprived areas: approaches to good practice / Department for Education and Skills approaches to good practice / Department for Education and Skills-
Norwich: HMSO, 2003. - 113 p.
ISBN 1-84185-875-7

This brief presents the outcomes of a research study examining good practice in supporting access to Information and Communication Technologies (ICTs) for black and minority ethnic (BME) groups. As part of the research, eleven case studies were conducted, and their separate reports combined into a summary of approaches to good practice. Based on the barriers identified through needs analysis, the report makes recommendations for improving access.
information technology; minority group; racial discrimination; United Kingdom.

Learning for the future: neighbourhood renewal through adult and community learning: a guide for Local Authorities / by B. Merton, et. al., edited by Cheryl Turner.
Leicester: NIACE, 2003. - 160 p.
ISBN 1-86201-148-6

Developing the right kind of learning opportunities is at the heart of delivering the Government's National Strategy for Neighbourhood Renewal. Local Authorities potentially have a key role in carrying this forward, particularly in relation to the provision of adult and community learning. This guide draws on experience in the field to offer Local Authorities essential information on the National Strategy, guidance on good practice in delivering adult and community learning in this context, practical details on funding, and a range of inspiring and informative case studies.
local authority; adult learning; local training initiative; Community programme; Community finance; United Kingdom.

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No 26/2002

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No 27/2002

Research

- Bridging to the future of education (Friedrich Scheuermann)
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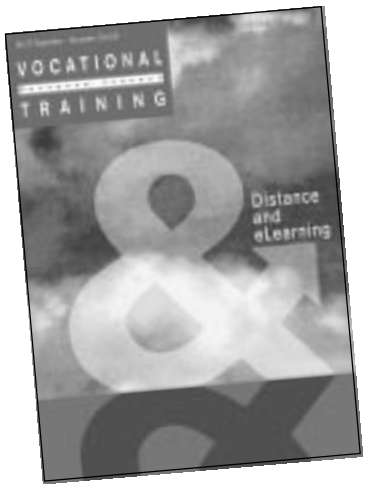

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