CEDEFOP

European Centre for the Development of Vocational Training

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European trends in the development of occupations and qualifications

Findings of research, studies and analyses for policy and practice

Volume II

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European trends in the development of occupations and qualifications
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Volume II

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Preface

The question of trends in occupations and qualifications affects everybody, but in particular those with responsibilities relating to education and training policy development. This is the case in the Member States and their regions, in the social partner organisations, and in the relevant EU institutions: the European Parliament, the Council and the European Commission, the Economic and Social Committee, and the Committee of the Regions.

In the past few decades, education and training have acquired a high status in European countries. In particular, in the wake of the structural change in the world of work and in trade and industry, in the wake of internationalisation and globalisation, and in view of the increasing penetration of 'technology' into social and cultural life, the structures of, and courses offered by, training and further training are playing an increasingly important role. Earlier rigidities, which still characterise education and training systems all too often today, are now being called increasingly into question as a result of this technological penetration.

The separation between education and training, technical/practical training and theoretical/academic education, application-oriented training and technical training with an academic basis, etc., is increasingly being overtaken by this trend.

The time when work was rigidly divided into executive and conceptual, intellectual and practical, intellectual and technical intelligence, would appear to be over. The division into 'two cultures', one based on the humanities and one on science and technology, which had already appeared to be artificially maintained, is now beginning to waver. In industry and in the field of personal services, routine work, assembly line work and purely auxiliary activities have in many cases become obsolete in the EU with the aid of technology and of the new forms of work organisation it makes possible. As a result of extensive capital investment, the jobs of blue- and white-collar workers with minimal qualifications have been replaced, to a significant extent, by machines. Since the mid-1960s, many of the more demanding jobs of qualified skilled workers and craftsmen have also been performed automatically by machines, robots, flexible production systems, etc.

Since the early 1980s, with the increasing dissemination of computer applications and the construction and expansion of new information and communications systems, i.e. with the emergence of the information society, a new stage of development now appears to have been reached. Even intellectual work — the work of architects, artists and designers, mathematicians and physicists, journalists and publicists, lawyers and economics experts — is, in principle, becoming accessible and permanently available to all men and women. Many people can teach themselves the necessary skills via relatively simple programs and can learn the relevant computer applications. In other words, the sum of knowledge and the sum of human skills and capacities with reference to the current state of the art will very soon be available everywhere, at all times.

Admittedly, this new stage of development has only just begun. However, it is already becoming apparent that a large proportion of the knowledge and skills of highly-qualified professionals has now begun making its way into 'machines'. There is a tendency too for them to be similarly threatened by rationalisations, as is already largely the case, with their help, with blue- and white-collar workers with lower-level qualifications.

Meanwhile, less of a change is apparent in the unequal distribution of opportunities as regards access to education, training and employment, based on social and geographical characteristics and background. Similarly, children and young people whose parents are blue- or white-collar workers with minimal qualifications still have different opportunities in terms of advancement, participation and employment.

On the basis of expert scientific analyses and conclusions, this publication will concentrate

on concrete trends and the associated challenges, which are currently arising and are set to continue in the medium term, against this background. Its aim is to provide suggestions for necessary and desirable developments in programmes of education and training/further training, and to explain the institutional structures that are required in order to progress developments proactively, in a way that is realistic in both social and economic terms.

The decisive trends in the development of occupations and qualifications described in Volumes I and II of this reference publication appear to be obvious. It is time to draw the necessary conclusion from them in terms of policy and practice. In February 1999, the European Parliament adopted a resolution on the creation of jobs with future prospects ([1]), which makes it clear that there is genuine awareness of the relevant consequences for policy, but that there still appears to be a major deficit in terms of implementation. The chapter on employment in the Treaty of Amsterdam and the national employment plans submitted by governments with a view to combating unemployment also underline this point.

Science and research, which will be dealt with in Volume II in particular, have made crucial progress over the past few years. The labour market and occupational research and research into education and training have now obtained a rich store of knowledge. This will now be brought together at European level and made available to a wider public, the first time this subject has been covered in such a comprehensive way.

The three volumes now presented continue Cedefop's endeavours to make available to policy-makers and practitioners research findings and formulations on key issues of education and its development. This was done with the publication of Cedefop's first report on research into and development of vocational education and training 'Training for a changing society', in 1998, which covered a vast range of topics.

Volume I of the current publication summarises, in a convenient form, important findings of relevance to policy and practice. In Cedefop's view, they are of fundamental importance to the development of vocational and educational training (VET) and further education/training in Europe in the next few years, against the background of the research it has carried out and the findings it has obtained over the past few years, and particularly in the context of the thematic network with the same title ([2]).

As many of the contributions make clear, Europe is not as varied as it is always made out to be. In some cases, the regional and sectoral differences and the differences between particular occupational groups and training levels are greater within a particular country than are the differences between countries, e.g. in comparable regions and sectors or occupational groups. The most significant trends are largely comparable in terms of their key features. Despite continuing cultural differences within the EU, the value systems with regard to education and occupations also appear to be tending to become more similar. The dissemination of information and the increasing speed of communications know no bounds and are leading to increased agreement and improved understanding across language barriers.

A common European education and qualification area is coming into being in parallel to a common labour market. Today's young people have a far more positive attitude to geographical mobility in Europe than did the preceding generation, particularly if they are well-qualified or aiming to achieve higher qualifications.

The authors of the expert contributions to Volume II were commissioned by Cedefop to provide brief summaries of the most significant results of their research. Volume II takes the

([1]) Cf. European Parliament (1999): *Resolution on the creation of jobs with future prospects*, adopted on 8 February 1999 on the basis of the report by Thomas Mann MEP.

([2]) Circle for research cooperation on 'European Trends in Occupations and Qualifications', Ciretoq.

form of a scientific manual. The recommendations included in the two volumes are not necessarily all on the same level, but complement one another and should be regarded in this light. While in Volume I general conclusions are drawn and relatively abstract recommendations made, essentially on the basis of the expert knowledge compiled in Volume II, the majority of the expert recommendations in Volume II are more in-depth and develop their conclusions on the basis of concrete research issues, some of them comparative and some geared to a specific country. This is done with the aid of appropriate quantitative and qualitative methods, which are also of significance for the interests of specific sectors and occupational groups. Naturally, it is up to readers to draw their own conclusions for local policy and practice.

This publication could not have been produced without the cooperation of many researchers and experts from the Member States, and in particular of those involved in Cedefop's thematic network on trends in the development of occupations and qualifications. Cedefop has derived great benefit from their expertise and their direct or indirect contributions, and we should thus like to express our particular thanks to them here.

We should also like to thank our colleagues in the relevant departments of the European Commission and at Eurostat for their support. Thanks are due to Cedefop's documentation staff, translators, experts and secretariat and the many others who have been involved in the production of this document.

Johan van Rens, Director
Stavros Stavrou, Deputy Director

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Introduction

The European Centre for the Development of Vocational Training, Cedefop, is pleased to present Volume II of the publication on 'Trends in the development of occupations and qualifications in the European Union — Findings of research, studies and analyses for policy and practice'. It contains various articles on current trends, systematically arranged and specially written for this publication by researchers and experts in the field of vocational education and training, and to a certain extent links in with Cedefop's 1998 report on 'Current vocational education and training research in Europe'.

The whole work comprises three volumes:

Volume I contains, in condensed form, important **analyses, findings, conclusions and recommendations** drawn from recent reports by the European Commission and Cedefop, reports by Cedefop's thematic network (Ciretoq) on this subject, selected projects under the Leonardo da Vinci programme and targeted socioeconomic research carried out under the EU's fourth framework programme of research, on topics in the field of analysis, anticipating and predicting trends in the development of occupations and qualifications. It also considers relevant findings taken from reports on research carried out in various Member States. The choice and organisation of the analyses and findings in Volume I is essentially based on the material and statements contained in the articles written by researchers and experts in Volume II.

This volume is aimed at a wide audience, i.e. careers officers, teachers, trainers, students, schoolchildren and parents, practitioners and political or social actors. The wide variety of often conflicting information and knowledge relating to current trends must be thoroughly assessed and, although it will be extremely difficult, efforts have to be made to help the actors concerned, and all those affected by these trends, to make sense of it all and to use it in their own decision-making. It is not a question of presenting the latter with a simple set of rules on what to do, but rather a matter of helping them to make their own assessment of the situation, thereby enabling them to draw their own conclusions in the light of their own institutional environment, and to act accordingly.

Volume I will be published in three official languages of the EU. The original language is German. The electronic version will contain all three volumes in all the language versions and will be published via Cedefop's homepage **www.cedefop.eu.int**.

Volume II will be available in English, French and German and contains **articles written by researchers and experts**, which take a detailed look at the different subtopics under the general topic heading for each trend. These articles are based on the latest original research, findings and interim findings of their authors or groups of authors and research teams. Most of these articles are based on projects carried out in the framework of the Ciretoq network, the Leonardo da Vinci programme or the EU's fourth framework programme of research. Some of the authors have been working for several years in their research institutes on the topics they write about, and have put together the most important findings of their own research.

Volume III contains an annotated bibliography of publications compiled by Cedefop in cooperation with its documentation service. Readers should use this document for looking up further relevant literature on the subject. In addition, a **three-language Glossary** was prepared especially for this publication, which we hope will ease international understanding by explaining any difficult vocabulary or terminology used, for the use of both lay persons and actors in the field. Key words should assist the reader in reaching the relevant chapter in Volumes I and II.

Summary

For this volume, Cedefop launched a call for expressions of interest via the Ciretoq network and other similar research networks in Europe, and asked the authors to write articles on specific topics. The texts were revised by the editor and then approved by the authors. Cedefop then arranged for them to be translated into the other languages (English, French and German), and released for publication.

This volume consists of seven chapters, which are summarised below:

Chapter I deals with the **framework of the systems and its development**, i.e. the education, training and employment systems, particularly their socioeconomic aspects. An important role is played by the international and European dimension and by the inherent challenges facing all systems in the light of social, technological, ecological and motivational changes. This chapter contains four articles which discuss the most important of these aspects mentioned above.

Walter R. Heinz describes trends in occupations and qualifications in recent years from the sociological and historical viewpoint and points to the **great need for changes in education and training**. He traces developments from the highly industrialised society of 'Taylorism' and 'Fordism', that was based on strict divisions of labour, to the challenges of the emerging 'industrialised service-based society' and the coming information, communication and knowledge society. He presents the resulting new job and skill profiles, and those still to be classified and transferred through training, and underlines the need for changes in attitudes and behaviour among institutions and the individuals concerned.

Europeanisation and internationalisation were challenging the traditional models of skills transfer. The renewal or redistribution of the provision of education, training and further training among the various target groups, education levels and age groups was imperative. Not least, the nature of education and training and the methods and provision of training needed to be radically changed. Despite the increasingly rapid changes in job requirements, vocational skills were still, however, key points of reference for individual career and employment patterns and for companies' personnel and employment policies. Trends in skills were not only a decisive factor for the competitiveness of societies in the global economy but also for individual competitiveness and equal opportunities.

Tom Leney et al. report on the major findings of their study, commissioned by the European Commission (DG XXII), **to investigate whether vocational education and training systems and provision within the EU Member States have converged or further diverged.** Their study, based on existing literature, covers the period from the mid-1980s to the mid-1990s. Their overall conclusion was that in the face of common pressures, policymakers in all the Member States were following quite similar or comparable general objectives. They explain how these pressures included changes in technology and the organisation of work, and the globalisation of the production and distribution of goods and services. They stress, however, that substantial differences still continue to exist between the institutions and structures, deriving from cultural traditions and national differences relating to developments in knowledge and research, etc. Common developments would continue to come up against such basic differences.

In analysing trends, researchers needed to select certain specific areas and examine them carefully, because education and training systems tended to be complex. Researchers and experts should pursue dialogue on common objectives and principles at European level, rather than – at this stage, at least – aiming at common action and innovation.

Catherine Gay was commissioned by Cedefop to carry out **research on environment-related skill trends,** and to analyse the contribution made by environmental protection in job creation in various EU Member States. The environment had become a component of com-

panies' policies and integrated regional or local strategies (relating to a local community, a conurbation or a region, etc.). Specific environmental protection projects were found to be decisive for both the acquisition of skills and job creation. These projects were promoted by new partnerships between social, cultural and political circles and actors, and pilot actions carried out by them, leading to a wide diversification in the type and scope of employment and, consequently, the required skills or skills used.

From the design stage to the completion of a project, meanwhile, various occupations and job profiles were emerging whose occupants were taking up the initiative. Project leaders could be managers or technical officers, founders of enterprises or politicians. Common profiles became more apparent when a project was under way: project managers, communicators, organisers and administrators led the employees and project experts, and arranged for their further training, related to the project. Training was an important component of the project and was targeted at all the actors involved. Training was less a question of the acquisition of specific technical know-how than of comprehensive skills and specific competences that needed to be added to the individual, and mostly very different, skills of all the actors involved. Whether, as a result, it would be possible to maintain the professional profiles of the specialised workers involved in the long term remained to be seen. The education and training provided by the formal education and training systems in the countries participating in the study had only just started opening up to these new fields, some of which were highly employment-intensive.

Mario Gatti and ***Claudio Tagliaferro*** report on the findings of their research on the **engineering industry in two regions, Modena and Vienna**, commissioned by Cedefop, and carried out in cooperation with the two regions. Scrutiny of the trends in both regions in this sector had revealed a number of important developments in respect of the needs for certain professions and levels of skills, which in the region of Modena had been immediately taken on board in considerations on how to reform the training on offer and the curricula for vocational training plans, and in Vienna had caused such considerations to get under way. This study illustrates how actors in the field can be directly supported through research, which can provide important fundamental principles and assistance that is decisive in the regional planning of needs anticipation/analysis. Vocational training establishments, technical colleges and universities could make use of such research to continue or change the education and training they provide, quickly and efficiently adapting it to the trends in work organisation. On top of the questions relating to the amount and scope of education and training provided, important conclusions could be drawn relating to trends in completely new job and skill profiles, or new insights on existing profiles could be provided.

Chapter II deals with issues relating to the **development of the supply of and demand for qualifications and skills, particularly with regard to initial education and training.** This chapter contains five articles. Its central theme is whether, and to what extent, skills and training can give people better or worse prospects of getting a job, which levels of education are preferable and which levels of training provide the best opportunities, and in which fields they are likely to be of use.

It examines the impact of modern information and communications technologies (ICTs) on these questions, and the changes in the occupational and work requirements they bring about through the reorganisation of work and new divisions of labour. Was there a risk that specific groups of people or levels of education would be driven out of the workforce by people with higher skills, and did this point to a trend in the polarisation of skills, with highly-skilled workers at one end of the scale and low-skilled workers at the other? The chapter finally examines ways of restructuring training certificates, degrees and diplomas: which institutional instruments could be used and what time span could be envisaged for these qualifications to be adapted to the new requirements and conditions?

Hilary Steedman reports on the findings of a research project commissioned by the European Commission's Directorate-General on

Science, Research and Development (DG XII) **on low-skilled workers**. This research was carried out in a number of Member States and deals with various aspects: the rising wage differentials between the low-skilled and the higher-skilled, a comparison of their job prospects and trends in participation in, and access to, education and training. In all the countries participating in the project, there had been a rapid deterioration in job prospects for the low-skilled in recent years, while the provision of training and further training had not been developed to meet the need for higher-skilled workers. Technological change was the main cause of this fall in demand for low-skilled labour, and the expanding sectors were those where employees typically had higher level skills.

The next question, namely how can we reduce the number of people in low-skilled employment, was answered as follows: steps had to be taken to increase substantially the number of people continuing their education once they had completed compulsory schooling, i.e. those staying on at secondary school, attending vocational and technical colleges or going on to universities. Short-term measures aimed at early school-leavers, such as work-related youth training and employment schemes seemed, however, to have little effect. These schemes did not necessarily motivate young people to undertake recognised further education or training courses, but tied them down to relatively low-skilled jobs, which might not even lead to stable employment. The excessively high proportion of youth unemployment in most of the countries could scarcely be resolved through such measures. In addition, it also became apparent as the project got under way that fewer workers with lower levels of initial education took part in work-related training or further training. This was not because of a lack of training places in training centres and companies, but because most of these young people seemed to have no interest (or no further interest) in taking part in long-term training courses.

Lex Borghans and Andries de Grip have examined the polarisation of skills, i.e. **the relationship between the higher-skilled and the low-skilled**, from predominantly macroeconomic perspectives, and on the basis of relevant statistics**.** The bumping-down of the low-skilled by the higher-skilled and the oversupply of higher educated workers is discussed. Were the latter occupying jobs commensurate with their training? And, if, so, how did this affect the job opportunities of the low-skilled? Among other subjects, job competition is compared with wage competition among the low-skilled and higher-skilled. Attempts are made to answer the question of whether or not additional investments in schooling are 'worthwhile'. In obvious cases of bumping down, additional investments in education were not very effective, but, if new fields of activity opened up, the increased productivity of the more highly educated might make more educational investments fruitful. The authors' research suggests that the effects of training might also lead to new employment opportunities, indeed that a good supply of highly-skilled workers might even be a prerequisite for such opportunities.

Moreover, the research revealed that higher skills only paid off under certain conditions for, if higher-skilled workers only took over the jobs of low-skilled workers, their wages would fall. Only where changes in work organisation went hand in hand with the development of new and better products and services, including new fields of activity, could higher skilled workers expect to receive higher wages. However, regardless of whether the replacement process involved a retrograde move (bumping down) or calls for generally higher skills (upgrading), the low-skilled worker was the loser in each and every case.

Lázaro González, presents the findings of a study commissioned by Cedefop, carried out in three Member States, on **the impact of new information and communications technologies (ICTs) on the development of vocational skills and training needs**, concluding with the new challenges facing education and training. These would radically change the job and career patterns of individuals, and methods of work organisation within companies. Enterprise culture had to be changed, as well as the form and content of education and training. Transversal and multi-skilled work teams would be set up in the place of hierarchical or subject-oriented structures. Individual and personal skills, together with social skills, would

be vital for work in the information society: creativity and initiative, continuing training, the ability to be aware of the consequences of one's actions, the ability to work in a team, etc. would become more important in the future. The new technologies of the information society of the future would, moreover, require general basic skills that should already have been learnt during initial education.

Werner Dostal also stresses the need to increase the provision of education and training in his article on the subject of computer technology itself. He found a high demand for **computer-related and multi-media skills**, which training schemes and training capacities could scarcely meet.

Employment structures for occupations in the field of information technology and communications technology revealed different types of computer occupation, e.g. core activity, mixed-skills activity and marginal activity. Core activity, or 'pure' information technology occupations were in high demand, but there was also a large number of people working in this area who had come in through the back door, so to speak, and who, because they had been working in a related area, had taught themselves the job and acquired additional skills. Whether these relatively low-skilled workers would be able to continue working in the narrower sphere of information technology in the future, or whether, as the author suspected, they would be pushed back into a more general or marginal area, remained to be seen. That would depend, among other things, upon whether it would be possible to plan and regularise this area of activity, or whether activities that were rather abstract and difficult to regulate would remain to the fore in the future.

In any case, the present and foreseeable future labour market prospects for these occupations was very favourable. On the subject of training, the author calls for the expansion of further and higher vocational education, saying that on-the-job training, such as that provided under the dual system, is inadequate in the medium term. The increasing use of multimedia technology and the Internet, etc. had, moreover, led to the creation of new, more flexible forms of working, such as teleworking, which might replace the traditional structures and patterns of industry. A core team would still remain, but only to a limited extent.

Martine Möbus and ***Eric Verdier*** report on a **comparative study on the structuring and regulation of occupational profiles** and rules, and certification **in France and Germany**. They examined in particular the institutional environment and the coordination measures being taken, and the impact they had on new rules and regulations on vocational qualifications in the two countries. The ongoing processes and their results would not only shape the supply of education, but would, moreover, influence the structuring of the labour market and the industrial relations of both countries in general. The main question behind this study was whether, and to what extent, the processes being used were adjusting to the social and economic challenges, and whether they were in a position to stand up to the rapid changes they brought in their wake.

Could formally defined and officially sanctioned vocational qualifications and skills still provide points of reference in these times of rapid change in labour and production? What impact did they have on trends at sectoral and interprofessional level, and at corporate level? What were these regulations like, were they general regulations, or did they lay down detailed rules? Were they mainly market-oriented regulations such as those prevailing in the Anglo-Saxon countries, or regulations laid down by the supreme authority of the public authorities, as in France, and were the social partners actively involved in the process, as in Germany? The cultural and traditional differences clearly stood out, enabling conclusions to be drawn for the future development of institutional coordination systems in each of the countries concerned. In any case, it was felt that the involvement of the social partners would play a key role in these matters.

Chapter III deals with comparative research, as Chapter II, but under the heading **further education and training and lifelong teaching and learning**. Many of the arguments set out in Chapter II can be carried over and applied to the further education of adults and early school-leavers but, in addition, there is a

whole new range of challenges in view of the changing needs for competencies and skills among individuals, companies and the economy as a whole. The two articles together cover the most important categories. While the first article discusses general education and training needs, the new forms of education and training on offer and the educational structures that need to be developed, the second article looks at the education and training needs themselves and how they are the result of new corporate developments and trends in work organisation. The flexibility and adaptability of workers, and their active integration in the new organisation of work and production is emphasised, as a result of which the workforce faced certain challenges as regards education and training, whether employed or unemployed.

Graham Attwell and Alan Brown have examined the **competence and skills needed for lifelong learning** and the trends and challenges across Europe. Qualifications for lifelong learning had become a 'conditio sine qua non' and were regarded as core skills of individuals in order to enable them to have a better chance to develop and maintain their career. This had led to an increasing focus on vocational education and training, particularly at the interface between school and work. Permanent employment as an experienced skilled worker in one occupation would in future be more the exception than the rule. Occupational mobility and flexibility would rather become more necessary for individuals and organisations in the face of increasing competition and productivity.

It was not merely a question, however, of workers being able to adapt to new tasks and fields of activity, but rather of them being able to handle the rate of change, organise their lives accordingly and play an active role in the change processes. The need for continuing lifelong learning was not just the concern of a handful of university and college graduates and professionals. Rather, every man and woman had to be prepared to undertake continuing learning and to be open to new conditions, be they economic, cultural, social or political. This challenged the very taxonomies of knowledge and meaning, skills and experience of European society, dating from the time of the Renaissance, which now had to seek a new identity. What were the new paradigms of learning, the 'what' of learning and also the 'how' and 'why' as the late industrial society drew to a close and a 'cognitive' or 'knowledge-based society' dawned?

Hartmut Seifert presents an overview of the various areas of continuing vocational training, basing his article on **the links between further training within companies, outside companies and industry-wide** in the light of the fact that it was becoming increasingly important for every man and woman to undertake continuing training and learning their whole lives long. Was the training provided by institutions and under the statutory and collectively agreed regulations enough, and did the resulting structure of training supply suffice? He gives examples of the situation in Germany, and comes to rather negative conclusions, stressing the need for adaptability, both in current work organisation and labour market policy and in continuing vocational training and adult education. A closer relationship between work and learning was crucial, whether in companies, further training centres or technical colleges and universities, and could be provided on the basis of new work organisation models and collectively agreed regulations. These regulations would have to place greater emphasis on the above needs.

The existing options had not allowed for the interests of companies, individual workers and persons participating in continuous training to be taken into equal account. Neither the unemployed nor employed, particularly the low-skilled, were being given further training at the right time and they could therefore not apply for the jobs most suitable to them. Any reform of the continuing education and training systems had to provide for a mutually agreed distribution of tasks between companies and public authorities and be based upon the general continuing vocational training needs of the employed, job seekers and the unemployed. In addition to the need for collectively agreed regulations, there was also a pressing need for relevant continuous education and training legislation.

Chapter IV deals with the main points of **training and further training within companies**,

particularly the methods used and the competencies and skills they seek to develop. It contains three articles. The first deals with new trends within major European companies and attempts to classify the specific learning approaches created or designed to develop skill profiles. It describes the further training strategies implemented by companies to cope with the ongoing reorganisation of production and services, and illustrates how they are making better use of the potential skills of their employees and involving them more in the change process relating to work organisation. The second article deals with the competitiveness of small and medium-sized enterprises and their approaches towards providing technology and management training for their workforce. SMEs had to improve their chances of survival, particularly through the further training of managers and the entrepreneurs themselves. In view of the great pressures placed upon the latter, new paths would have to be taken and a system of comprehensive support, information, advice and continuous training set up between companies. The third article deals with similar issues relating to practical approaches and experiences. It shows that by establishing closer links between measures implemented by the public bodies of a sector or region and local companies a strengthening dynamic could be set in action that encouraged job creation, and promoted the competitiveness of the companies and region or sector concerned. Training and further training provided by VET colleges, technical colleges and universities in the region, training schemes set up in cooperation with companies and the adaptability to meet on-the-spot needs would play a crucial role in this process.

***Barry Nyhan*'s** article describes trends in competence development, which was **one of the strategic factors in ensuring companies' survival and competitiveness**. There was still much discussion going on concerning the nature of the competencies required, and how companies could become learning organisations and create an organisational learning climate which would support the development of these competencies, and there was no agreement on the matter. Using case studies, the author puts forward a taxonomy of methods and competencies for the very different teaching and learning situations, discusses the conditions and calls for efforts to be made by companies and industry-wide to improve the interaction between informal (on-the-job) teaching and learning and formal (classroom) teaching and learning. Companies with more vision in this matter had already started taking steps in this direction and were making great efforts, but many others had got no further than general considerations of the matter.

A number of general principles firstly had to be clarified, which were needed to underpin the ongoing change and adaptation process and its dynamic, namely visionary management and support given by managers of enterprises, their willingness to take risks, trust in the competencies of their workforce and wide understanding of the change process itself, etc. The competence profiles required were emerging along the following four axes – cognitive, technological, social (organisational) and business (entrepreneurial). Efforts had to be made to understand and master the general complexity of the situation behind each profile. This was no longer a management concern alone, but one which demanded the full participation of all the workers and experts in a company.

John Konrad underlines that **the most crucial problem facing small and medium-sized enterprises and new enterprises was how to strengthen their chances of survival**. A large number of new enterprises would not survive the difficult start-up period. Access to effective training that met their short- and long-term needs had to be improved. This could increase employment and promote social integration, and also encourage a flexible, decentralised and adaptable economy. The author calls upon researchers to double their efforts to determine the necessary support mechanisms that can be implemented at local and regional level, appeals for the recognition of training qualifications across Europe, and asks for greater commitment on the part of the EU in promoting local structures and actions, particularly in view of the Agenda 2000 programme for the accession of eastern European countries to the EU. New concepts, actions and practices needed to be developed and fostered through greater cooperation in the field of research.

Loek Nieuwenhuis's article concentrates on the **role of vocational education and training in facilitating innovation in small and medium-sized enterprises** in the process of regional and sectoral development. Local industrial networks and their links with VET colleges and training centres in the region were becoming increasingly important for sustaining the dynamic of the training process. Common learning activities and continuous interaction between VET colleges and companies would take the place of traditional initial vocational training and further training, despite the fact that the role of VET colleges in these innovation processes was still rather marginal. To become 'spiders' in regional innovation networks, VET colleges had to develop towards becoming learning and networking organisations themselves. Using a number of concrete examples in the Netherlands, the author clearly shows how such networking and dynamics can make significant contributions to both local and regional economic development and to the renewal of sectors of the economy as a whole.

Chapter V deals with the **teaching and learning of language skills**, that are becoming increasingly important in view of European integration and the spread of internationalisation. It contains one article which underlines the prime importance of learning language skills for vocational education and training, as well as adult education. The contribution deals with the study of languages within vocational education and training and the use of new technology in teaching foreign languages and in the learning process.

Gruber (et al.) set out the findings of Leonardo da Vinci projects in the field of **'Vocationally oriented language learning (VOLL)'**. Language training needs had to be assessed from the point of view of working situations in which languages were really needed. Language learning was of dual significance for working life because it constituted a major element in a person's general cultural development and was an advantage when it came to obtaining a job, either inside one's home country or when taking up the option of mobility available within the Union. The use of modern multimedia training could considerably assist language learning processes. Computer tools would, however, be used in conjunction with other training methods and schemes that would provide contact with the teachers and persons of the mother tongue. Mere training in structural (grammatical) and vocabulary knowledge would not result in real linguistic competence and language proficiency. Concepts on how to use these new forms of training were being developed, together with information on how the new information and communication technologies (ICTs) could be used in language training. These in particular should be of great interest to students learning new languages for use in their job, as well as their teachers.

Chapter VI gives a summary of **the approaches used in and the findings of various EU programmes and activities concerning vocational education and training**: it surveys and analyses projects of the Leonardo da Vinci (LdV) programme of the European Union, the EU's fourth framework programme of research and the work carried out by Cedefop and its network, Ciretoq. Projects launched in 1995 and 1996 in the framework of the Leonardo da Vinci (LdV) programme on the anticipation of qualifications and competences are analysed in detail, and tentative conclusions are drawn up. The remaining articles deal with the opportunities and prospects for 'European' vocational training research, together with its limitations, and – in terms of the more specific support provided by policies – with the tools and methodology of scenarios aimed at facilitating comparative research within the EU.

Marc Ant and Jeff Kintzele have written a comprehensive article for this publication, entitled **'Surveys and analyses: projects of the Leonardo da Vinci programme'**. As well as describing the main points, topics, subjects and approaches of the research activities currently being undertaken, it looks at the topic of 'anticipation of qualifications and competences'. The great diversity of topics and approaches discussed, and the methods used, give some idea of the wide variety of findings achieved, or likely to be achieved in the next few years. These findings are mostly highly specific in nature and, as a rule, can be applied only within a certain context and for relatively limited innovations. The effects of these find-

ings and ways of putting them into practice through the implementation of pilot projects in the Member States are also examined.

Burkart Sellin, in a second article on the **anticipation of competencies and qualifications**, summarises the preliminary findings of projects carried out under the Leonardo da Vinci Programme, on the anticipation, forecasting or projection of trends and developments concerning qualifications/competencies and employment/occupations, and endeavours to make an initial assessment and to draw some tentative conclusions. This study was carried out by Cedefop in cooperation with the firm of consultants BBJ (Berlin/Brussels) in the spring of 1998. The projects carried out under the first call for tenders of 1995 had already been concluded, but only a few of those carried out under the second call for tenders of 1996 had achieved any results; a large number of projects were still under way, so this analysis could be considered only as an interim report.

One thing stood out during the course of the study, however, namely the lack of coordination between projects on the same subject; it would have been extremely useful to have had a continuous exchange of information and experience, and closer cooperation between projects, as this would have achieved synergy effects, and thus maximised the benefits of the findings for all the actors, Member States, practitioners and politicians involved. An ex post analysis of project clusters would only be worthwhile, in his opinion, if projects were linked by cooperation networks, or at least participated in information exchange programmes.

Michael Kuhn and Erhard Schulte are both closely involved with European projects on research into education and training, including vocational training, on behalf of the Directorate-General for Science, Research and Development of the European Commission. They present an initial overview of experiences with cross-border projects, particularly in the field of vocational education and training research, and put forward proposals on how the **'European dimension' and culture of education and training research, including vocational training,** could be strengthened. For Europe, it was necessary, wherever possible, to introduce a more holistic vocational education and training research concept, and a common research agenda; a new balance between national and regional culture and European identity had to be established. Europe had to abandon comparative research in favour of 'collaborative' research. Cooperation and coordination had to be intensified at all levels. If possible, vocational education and training research should be accepted as a separate research discipline and its interdisciplinary nature particularly emphasised. The authors, inspired by Cedefop's creation of the thematic network (Ciretoq), stress the urgent need to set up thematic cluster groups and institutes within the European Union, and to establish cooperation programmes among them. Transnational and European research, in tandem with cooperation in the field of vocational education and training, could lead to the development of a real 'European society' in the medium term.

Fons van Wieringen presents the **scenario methodology** as a means of analysing trends and strategies in the field of vocational education, particularly in the increasingly important area of adult education. This methodology had already been used in the past, particularly in the field of sociology, and was now being viewed with increasing interest as a useful tool in the fields of economic policy, labour market policy and vocational education policy, for the purposes of international comparison and trends. To avoid one-sided speculation on what might occur in the future, the author interviewed the experts or stakeholders who were actually participating in the new developments themselves. The questions were grouped according to major trends, which were also divided into subgroups of other trends representing basic conditions for vocational education policy, some of which came as no surprise. The various elements of the scenarios could then be arranged in different ways, depending on the expected (i.e. particularly policy-oriented) basic conditions within a given context. For the purposes of comparison within Europe, this methodology appeared to be particularly suitable as a means of offering alternatives to policy decision-makers and social actors. Cedefop is currently carrying out a

research project using this methodology and is hoping to come up with appropriate results by 2000.

Finally, **Chapter VII** refers to work currently being carried out by **Cedefop's thematic network, Ciretoq**, that has not already been mentioned in the articles in this volume. The network's objectives, working methods and work topics are described for readers who know little, or nothing at all, about it. In addition, there is a short interim report on work currently being undertaken by the network and findings, together with a list of publications. Then, last but not least, is a summary of the findings of some of the projects being carried out, on various topics. Information concerning member institutes and reports published by the network is available on Cedefop's home page: **www.cedefop.eu.int.**, which is updated on a regular basis: The 'Ciretoq-Newsletter', published twice-yearly, is available (only from Cedefop), free of charge. It is also available electronically, via Cedefop's home page.