



IAO

WHITE PAPER

RELATIONSHIP
BETWEEN EDUCATION,
TRAINING AND
EMPLOYMENT

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Executive Summary

Although the contribution of education and training to economic growth and productivity is widely confirmed by research results, numerous questions remain unanswered. They concern the nature of skills needed, problems of unemployment and of the transition of young people into working life, the emergence of new jobs, and the role of education and training policies.

The ageing of societies and the rapidly changing technological and socio-economic environment call for ongoing renewal of skills through continuous training. Here, the discussion focuses on whether or not education and training systems are sufficiently prepared to support and invest in training and to what extent there is need for reforming. This white paper discusses some recent research work carried out in these fields and gives an overview of ongoing activities. The conclusion drawn indicates that a single policy is not expected to substantially increase economic growth and employment, and to decrease unemployment. What is more, a policy-mix and a package of strategies are necessary to achieve these goals.



Relationship between Education, Training & Employment

Education & Training Policies - Needs & Opportunities

Education and training policies analyses the links between new technologies, skill requirements and economic growth. In spite of differing approaches to explaining these phenomena, most research studies come to the conclusion that skills and technical progress are interdependent and should be promoted in order to stimulate productivity and growth.



In response to the questions, "What skills are needed in the transition to the information and knowledge based society" and "How can they be provided?", "transferable skills" is the correct answer. The internationalization of the economy, increasingly complex production processes and the growing need for information management are affecting the nature of work and working life. Changing jobs in the life course with varying tasks and requirements demand skills that can be brought into play flexibly and productively.

Here the focus is on skills on the lower-intermediate level. To a greater degree than before, the curricula in these training courses - the dual system in Germany, apprenticeship training in Great Britain, and the vocational schools in France - should provide transferable skills that prepare trainees to take on responsibilities and changing tasks.

The second issue, the provision of skills, concerns politics. Vocational training policy should no longer limit itself to running education and training institutions. It should, moreover, co-ordinate the provision of education and training (the "National Skill Producing System"), and the value placed upon skills and their use at work (the "Wage-Labor Nexus").

Linking both systems in a "Skill-Labor Nexus" poses the challenge of integrating education and training policy on the one hand, and labor market and employment policy on the other, as well as the different institutional responsibilities.

Technical Change & Employment Structure

Due to the ongoing fast paced economic change and emergence of new technologies in ICTs, (Information and Communication Technologies), which set the grounds for an Information Society or Knowledge Based Economy, there is a growing need for changes in the educational policies. These new techniques generate, very classically, new products and processes. But, as we shall see, they also generate changes in the very nature of work itself.

Firms do hire people with high educational levels and pay them more, but this is not due to any positive influence of skills on workers' productive performances. What happens is that firms do not know workers' productivity by the time they hire them. So, they use their educational level or training achievement as a signal (an indication) of their potential efficiency.

The underlying assumption is that people are naturally "gifted" and this gift is not modified by education. Of course, one additional assumption is that those workers who are "gifted" are so, both for studies and for production, which makes it rational for firms to try to infer their potential productivity from their educational achievement. According to screening theorists, education is thus used as a screening device, a filter, whereas its impact on productivity is most uncertain. However, this signals nothing but over education and therefore cannot be interpreted as reflecting the need for more skills due to the development of ICTs.

However, the very nature of this complementarity proves difficult to assess. Do new ICTs require higher skills? Or, on the contrary, do highly skilled workers allow for the use and/or the development of new technologies? In other words, what is the direction of the causality? This question has not yet been answered by econometricians. They are able to display a strong correlation between both variables but the causality issue remains unsettled.

However, although this is definitely an interesting and important empirical issue, it is not really relevant either from a practical or from a theoretical point of view. The very reason for this is that we know that both skills and technology are important determinants of micro productivity as well as of macroeconomic growth. At the micro - firm level, and despite the criticisms of screening theorists, Human Capital Theory has convincingly stated that education and training makes workers more productive. In parallel, economists of innovation have shown since a long while now that technological change strongly improves firm's performances, both in terms of productivity and competitiveness. Similar results have been displayed at the macro (country) level by endogenous growth theorists. Results have shown that human capital as well as technology is the major engine of the growth process, in the long run.

So, from the theoretical as well as from the practical point of view, the only important point is that skills and new technologies enhance each other, and that both should be developed in order to foster economic growth.

Skill Requirements

Even though the precise direction of causality between ICTs development and skills is not a major issue, we need to go one step further in the analysis of their relationships in order to assess what kind of skills are needed in the transition towards an Information Society.

In this respect, researchers have shown that ICTs tend to require higher skills for two main reasons. The improvements in the means of communication made possible by the development of ICTs tend to ease the internationalization of production. So, a large part of the activities requiring unskilled labor can be relocated from industrialized to developing countries. As a consequence, firms' requirements in terms of skills tend to rise in the latter. So, in this view, the emergence of a global information society - due to the development of ICTs - first increases the need for skills in OECD countries through its simulative impact on international competition.

A second reason for the positive complementarity between skills and ICTs is that the role of information processing is becoming crucial in the production process. Capital equipments have become more fragile, so the workers need to cope rapidly with a large span of unforeseen difficulties arising in the production process. In this context, an efficient reaction requires a good capacity of synthesis as well as the ability to communicate with peers in order to assess the origin of the breakdown. Moreover, workers need to be able to handle the increasing amount of information processed in the production activity as well as to take initiatives in order to adapt the production process to an increasingly unstable demand. This requires from them a high degree of polyvalence.

The direct consequence of this is that workers - either white or blue collars - need highly transferable skills together with a good educational level. Given the rapid pace of technical as well as of economic change, they will be forced into changing activity, and may be job, several times in the course of their working life. So, they need to be endowed with a good general educational background, which will help them adapt to new activities. Moreover, as we have seen, in each job a high degree of polyvalence is required, thus calling for highly transferable skills.

So, our argument here is that there is basically no trade - off between flexibility and productivity. Of course, in the very short run, very specific skills may prove more efficient for one given task. But since workers have to participate more and more in various tasks, in a dynamical perspective, even in the short run, they need general as well as transferable knowledge in order to be efficient. This is all the truer in the long run since new technologies are a major engine of economic growth. So, a careful scrutiny at the characteristics of new technologies shows that there is no trade-off between flexibility and productivity at least in the medium run. The only trade-off (if there is one) is between a static and a dynamical view of economic development.

Starting from the fact that a high level of transferable skills and a good general educational background are required from workers in the transition towards an IS, the last question we would like to address is: How can these skills be provided? What can be done in order to improve the education and training level of the workforce?



They usually amount to quite narrow competencies: workers with lower intermediate skills have typically learnt how to perform a defined series of tasks, but are not really prepared to take responsibilities nor to adapt to different activities. As we have already seen, these turn out to be decisive capacities in order to be able to cope with the requirements of spreading ICTs. Therefore, the average level of intermediate skills definitely needs to be increased so that most, if not all, workers be endowed both with broadly transferable skills and with a good capacity to adapt and to learn.

Policies for Skill Production & Enhancing Intermediate Skills

The nature and potential efficiency of the measures that can be suggested in order to enhance intermediate skills strongly depend on the analysis of the determinants of the skill level.

Here is no systematic relationship between school expenditures and students' performances. The main determinant of students' scores is definitely the family or social background. So, the first policy implication that can be drawn from these results is that educational policies should not be restricted to the allocation of funds to the schooling system and have to encompass an important social dimension.

However, more recent studies display the need for a minimum funding of the schooling system. Research shows that the quality of schools as well as of teaching conditions positively influences future earnings of students. Since these at least partly reflect the productivity of workers, schooling expenditures appear to enhance students' general ability.

So, the traditional analysis in terms of educational production functions suggests two types of measures likely to enhance the average level of intermediate skills, since these are partly acquired at school. The first ones should focus on the social environment of pupils - social policies - and the second ones should ensure a minimum quality of the schooling system. Even though they are fairly different in their precise content, these two policies share an important feature: they are both school as well as supply-side oriented. But this is only part of the answer since intermediate skills are also acquired at work.

This feature is explicitly taken into account by the institutional approach. This suggests that production and valorization of human resources are closely interconnected. In fact, they articulate to each other to determine the national level of intermediate skills.

These strategies can be defined as the combination of 4 elements:

- ▶ ***The efficiency of the schooling system***
- ▶ ***Firms involvement in skill enhancement***
- ▶ ***The willingness to pay for education and training***
- ▶ ***The degree of institutionalization and codification of education and training***

Education, Training & Employment - Facts & Figures

This section illustrates the positive contribution of education and training to earnings and economic growth as confirmed by a number of studies.

The implications for employment growth are more long-term through improving productivity and competitiveness and the successful mastery of structural change. In the short- and medium-term, employment can be increased only through a package of various economic strategies.

However, successful employment policy alone cannot automatically eliminate structural unemployment if caused by a mismatch of qualification and requirement profiles, and intensified by rapid technical progress and long-term unemployment. To overcome the problems of structural unemployment, skills are required which enable people to adjust to structural change. Priority should be given to transferable and polyvalent skills in view of the unpredictability of specific occupational profiles demanded on the labor market.

Basic orientation in education policy requires at least a global view of future qualification structures. Forecasts for a number of European countries correspondingly show that the restructuring of employment goes hand-in-hand with a growing demand for more highly qualified workers. Lower skilled or unskilled people are expected to have only poor opportunities in finding stable jobs with prospects in the future.

It also discusses the opportunities and problems of identifying and quantifying new employment fields, occupations and qualification requirements. It is important to distinguish between quantitative (net) employment gains and qualitative changes of occupational tasks and skill requirements. It also includes some remarks concerning the transition from training to the labor market that has become increasingly difficult in almost all European countries - in spite of the rising level of training among the young generation. Education policies favoring specific qualifications aimed at making people immediately productive should be, however, not the solution. Consideration should rather be given to how a combination of polyvalent, transferable and practical training elements can facilitate the process of integration into working life and thus overcome the conflict between mobility and productivity.

Given the limited time available, this contribution can only touch on some aspects of the complex relationship between education, qualification, growth and employment. The starting point is the question, "Do education and training promote employment and help to reduce unemployment?" In this connection the following subjects will be addressed:



The Benefits Of Education And Training And Their Contribution To Economic Growth And Employment

Unlike traditional growth theories, the new growth theory explicitly includes technical progress and its determinants in addition to real capital and labor. The main factors that influence endogenous technical progress are research and development, innovation and, more particularly, the level of training, qualification and skills of the labor force, i.e. the human capital.

Since the 1960s most of the analyses in the field of the economics of education in respect of the individual and social benefits and costs indicate a considerable contribution of education to income and economic growth. Equally, almost all current analyses of endogenous growth confirm this positive effect.

The next question is whether and under what conditions an increase in economic performance, which is influenced, also by education and training, could increase the level of employment. The answer is apparently simple. A rise in employment can be achieved when:

- ▶ In the short and medium term, economic growth exceeds the rise in productivity;
- ▶ In the longer term we succeed in mastering structural change in the course of which non-productive companies and jobs are displaced by productive and innovative ones. This in turn improves the international competitiveness of an economy that is an essential basis for creating new jobs or safeguarding existing ones.

It should be stressed that in the short and medium term, growth in employment can scarcely be achieved by means of more education and training but above all by means of investment. Investments and employment can be promoted by accompanying measures in the field of economic, financial, monetary and wages policy.

Concluding, education and qualification have a major effect on economic growth only in the longer term. Whether this will also lead to an increase in employment and create new jobs depends above all on productivity and the degree of success in mastering structural change. In the longer term, however, there is no alternative to an increase in productivity and, by extension, in the skill level of the population.

Some Causes Of Persistent Unemployment And How Training Can Help To Overcome Them

We should bear in mind that "employment" is related to jobs whereas "unemployment" also takes in the potential "supply" of workers. It would be a fallacy to assume that an increase in job numbers would automatically reduce unemployment to the same extent.

Mismatch unemployment consists in particular of structural unemployment, i.e. above average unemployment in certain occupations, economic sectors, regions or qualifications. Whereas in one area there may be a shortage of manpower, in another there exists a high level of unemployment. This phenomenon appears particularly in periods of rapid structural change in the course of which laid-off workers in one sector or profession (for example in agriculture or industry) or with specific skills do not succeed in switching easily to other sectors (for example, services) which may have a shortage of skilled manpower and in meeting the requirements there. This problem is particularly acute when the qualification profiles are oriented towards specific companies and activities.

Another explanation for the persistent nature of unemployment and, in particular, of long-term unemployment is given by the "hysteresis theory". It attributes the increase in the volume of the long-term unemployed which even in a favorable economic climate can only be reduced with delay, to the fact that in a recession there are selection processes going on and unemployment becomes a stigma. Furthermore, many unemployed become demoralized and gradually lose interest in seeking jobs. Another main reason might be that employers suspect that these applicants have a lower level of productivity. Specific skills become even more obsolete the longer individual unemployment lasts and the more rapidly the job requirements change, e.g. as a consequence of the introduction of new technologies.

One interim result is that education and, more specifically, training can help to reduce unemployment by:

- ▶ ***Promoting the reintegration of the long-term unemployed and disadvantaged people into working life by means of further training, retraining and related schemes***

- ▶ ***Softening the effects of structural change on unemployment and low-level employment by imparting broad and transferable skills***

In order to master structural change, in the short and medium term retraining and further training activities are required, in the longer-term anticipative reforms of the training system to prevent structural unemployment. This also calls for forecasts of the qualification structure of the labor force and of jobs, for analyses of appropriate measures and of their efficacy to help avoid imbalances on the labor market.

An anticipative balancing of education and employment, of course, will not prevent unemployment if it is seasonal or cyclical in nature. However, it can make a decisive contribution to reducing its structural components and to avoiding persistent unemployment related to a mismatch of skills.

Possibilities Of Forecasting Qualifications And Of Identifying New Employment And Occupational Fields

As already mentioned, preventive education and labor market policy is dependent on some notion about the future, i.e. on possible future developments and structural changes in the employment system and in qualification requirements. Forecasts of this kind may be of a quantitative-structural nature; the determination of future "innovative" qualification contents by contrast is an area covered by occupation-related pedagogic and curricular research.

Our forecasts show a continuing trend towards the service sectors and "higher level occupations". The largest increase in demand and, depending on the type of training, the best career prospects are expected for higher education (including higher vocational training). It is forecasted that the demand and thus the job prospects for semi-skilled or unskilled workers will drop considerably. For the intermediate level, i.e. initial training and apprenticeship, there is a slight but not above average increase. People with these qualifications will increasingly be recruited for jobs, which hitherto have been held by workers with a lower level of qualification.

By way of summary, it can be said that despite different methods, delimitations and educational systems of the countries, the forecasts come to the conclusion that structural change in industry and society goes hand in hand with a major increase in the qualification requirements of the work force. Individuals with low level or no vocational qualifications who already face the most difficult problems on the labor market today will probably have a small chance of finding stable and promising employment in future.

The future development of employment amongst those with intermediate qualifications, i.e. people who have completed initial in-school or in-plant training is assessed differently in some cases. All forecasters do, however, stress that on this level considerable substitution processes are to be expected and that these qualifications are viewed as problematic unless they are made more attractive.

Parity of esteem between practical and theoretical education and training can best be achieved in the employment system in respect of income, adequate employment, career prospects and further training opportunities.

First, a distinction should be made between "new" fields of employment which create additional jobs on the one hand, and "new" occupations which differ in their contents, profiles and requirements to a major degree from "old" occupations. A further important criterion for assessment is whether these new jobs and occupations offer a viable future and satisfactory employment conditions, and are commensurate with the qualifications, i.e. whether we are dealing here with "good or bad jobs".

When evaluating new areas of employment, consideration should be given above all to their additionally. If in some employment sectors existing jobs are reduced by new ones, the net employment effect may be relatively low. One example for substitution of this kind is the field of media and communication technology. The emergence of new media occupations (for instance media operator, media designer, commercial occupations in audio-visual media production, multimedia experts, etc.) and the dissemination of information and communication technologies can lead to classical occupations (typesetters, graphic artists, designers, media technicians, etc.) gradually being crowded out. Further examples can be found in the outsourcing of corporate functions (in particular company-related services).

New areas of employment may also be created through statutory, institutional or fiscal regulations, for instance in the field of environmental protection (e.g. in emission control, waste disposal) or in safety at work, through the setting up of new public authorities and control bodies. Tax relief for specific services (for instance housekeeping) can lead to existing non-gainful forms of employment in the informal economy being professionalized, and non-registered activities in the shadow economy being legalized. In all these cases, however, attention should also be given to the economic and fiscal effects which tax relief or new control bodies have and how these affect employment in other sectors.

Many new jobs are related to the creation or generation of new or shifting needs amongst final consumers (for instance in the media sector, consumer/fashion articles, tourism/leisure time) that induce corresponding increases in demand, investment and employment in the upstream production areas. These employment effects are calculated in the usual econometric models.

Furthermore, we are also dealing with qualitative changes in products, manufacturing processes, new forms of work organization, logistics, etc. which may also have employment effects, albeit not always positive ones. For instance, rationalization investments, advances in repair simplification and in the shelf-life of products, the flattening of hierarchies linked to lean production and management may lead to employment losses for specific qualification groups.

The second area changes in occupational profiles and skill requirements, which may occur in shrinking employment fields as well, is closely linked to education and training. In this context several distinctions must be made depending on:

- ▶ Whether we are dealing with ongoing changes in an occupational profile, such as the enlargement or enrichment of job tasks. Examples of this can be found in almost all occupations, e.g. in those which use new information and communication technologies or in which integrative work is performed by means of new organization concepts. They include production-related services that are outsourced by companies to independent units. Activities of this kind call, in addition to specific professional knowledge, for all the skills which are required to run an independent company

- ▶ Whether these are occupations which "merely" call for specialization in the form of further training. These are mostly occupations with a narrow technical or commercial-administrative range of tasks. Occupations of this kind, which are tailored to a specific company, the requirements of which constantly change in line with the arrival of new technologies, should not necessarily be the subject of initial training but rather of further or continuing vocational training.
- ▶ Furthermore, it should be examined whether these are new occupations that emerge complementarily to existing ones. Examples can be found in the field of non-medical care which, given socio-demographic developments (ageing of the population, higher life expectancy, etc.), lead to new areas of application. They are closely connected to the classical occupational areas of medical and social care. Here there may really be additional employment effects.
- ▶ Finally, completely new occupational profiles may develop for which so far there has not been any formal training but at best informal or further training at the workplace. Occupations of this kind go hand in hand with the emergence and spread of social, economic and technological changes and the new application opportunities that they lead to. Examples can be found in the field of new media and communication industries, in environmental protection and in the leisure time and tourism sectors.

The main problem involved in identifying new occupations lies in differentiating between the new, the old and the intermediate. There are various ways of identifying them empirically. For example, we may conduct detailed analyses of those vacant positions, in which the description of the occupation and activities do not correspond to the traditional occupational descriptions and classifications. Another instrument is empirical surveys of the workforce and companies which, given the unreliability of random sampling, calls for extensive and expensive screening procedures and/or large-scale random sampling. Finally, analyses of in-plant further training activities, which are oriented towards day-to-day practice and changing tasks, may offer insight into the development of new occupational and requirement profiles.



Problems Related To The Transition From Training To Working Life

A higher level of qualification correlates significantly with lower unemployment rates, higher wages and better career opportunities. On the other hand, although young people are better qualified than any preceding generation, their transitional problems have worsened.

When there is such an unfavorable constellation of a high number of young people who have successfully completed training and restricted demand for labor - they enter into competition with at least three groups of people:

- ▶ Firstly, they compete with the numerous well-qualified persons in their own age group (intra-generative competition)
- ▶ Secondly, they compete with older skilled workers who have the advantage of more work experience and who, in periods of economic recession, leave companies in crisis and look for more attractive and stable employment (inter-generative competition).
- ▶ And thirdly, newcomers enter into competition with persons who were previously unemployed and who have obtained relatively up-to-date and practical knowledge by attending publicly financed further training or re-training measures.

Compared with the last two groups, newcomers who have completed training may have the advantage of broad and flexible knowledge and may demand lower wages. On the other hand, however, they are disadvantaged because of their lack of job experience and practical skills, a characteristic that serves as an important indicator for employers when assessing productivity. An additional problem may arise in cases where training was not "oriented towards the market" and thus leads to a mismatch between qualifications and job profiles. In-plant or practical training offers some advantages since the trainees have been known to the company for a longer period and, hence, are viewed as insiders. One important consequence would, therefore, be to take steps to increase in-plant and practical training or to take measures in order to give graduates access to job experience and company contacts.

This raises a fundamental question about the goals and functions of education and training: should education and training be oriented towards current success on the labor market and to improving the direct transition to the work process or should education and training aim at skills that may improve the longer-term employment prospects?

What is behind this is the hypothesis of a "trade-off" between broad, transferable skills that cannot be immediately utilized in the company on the one hand, and practical and company-specific training on the other. Whereas in the longer term the former certainly offers better employment possibilities, more protection against unemployment and greater flexibility in respect of future change and new requirements, specific training may ease the direct process of access to the labor market albeit possibly at the expense of longer-term employment prospects.

Conclusion

Research results based on the New Theory of Endogenous Growth as well as on the Economics of Education confirm, on the whole, the positive benefit/cost relation and the significant contribution of education and training to economic growth. Since employment growth is mainly dependent on production and productivity increase, in the shorter run employment can only be expanded by higher investments in real capital and supporting economic policies. In the longer run, however, only those enterprises will survive structural change which are innovative, productive, and are staffed by highly skilled workers. As a result, qualification and skills are important location factors for European economies and yield significant benefits. Although education and training investments are not expected to increase employment substantially in the short run, they are essential for mastering structural change and increased competition on the world markets.



Unemployment cannot automatically be reduced by economic and employment growth. In most European countries structural unemployment is persisting, mainly due to a mismatch in the profiles of qualifications and job requirements. Hysteretic unemployment, due to the obsolescence of qualification and the existence of segmented labor markets for skilled and lower skilled manpower, are further reasons for the persistence of structural unemployment. Thus, retraining and further training measures are increasingly necessary for matching the profiles of unemployed and jobs in the shorter and medium run. In view of the long-term structural change, not only is the skill level to increase, but also the profiles of skills should be adapted in order to ensure mobility, transferability and their adequate use.

Structural forecasts expect an ongoing shift towards service sectors and white collar occupations. Qualification becomes increasingly important in the course of the structural change of economies. This results in higher skill requirements and thus in an increase of the demand for highly qualified manpower. Employment of lower skilled or unskilled workers is expected to decline dramatically. To what extent this applies to intermediate education and training levels, too, is controversial. This becomes a crucial question for the attractiveness of education and training

which can be ensured on the one hand by reforming contents and curricula according to the need for broader, transferable and productive skills and, on the other hand, by a realization of parity of esteem - above all within employment.

When analyzing new occupational and employment fields, a distinction should be made between employment growth in new fields and new occupational profiles. What new occupations really are, with all their implications for educational policy and curricular reforms, should also be analyzed thoroughly. Many "new" occupational fields are but specializations of existing profiles or subject to a specific further training. There is a substantial need for increasing research and development activities in the field of identifying new occupations and employment opportunities and their implications for educational systems.

Research on the transition of youth into working life faces a paradox: On the one hand, education and training are considered to be the best protection against unemployment and to ensure stable and well-paid jobs. On the other hand, newcomers leaving education increasingly face transition problems, although they are better qualified than the generations before. This paradox can in part be explained by labor market theories. Graduates compete - above all in a constellation of high demographic pressure and economic recession - with job seekers who have the advantage of longer work experience and practical skills, thus being considered as more productive. The crucial question for educational policy is: Should qualifications and skills be more specific in order to facilitate the transition process into working life or should they be broader and transferable in order to ensure future employment and mobility in the course of structural change? This trade-off between productivity (in the short term) and mobility (in the longer term) is controversially disputed. Possible measures could be training schemes, which combine practical and in-plant training with broad and flexible training modules




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