

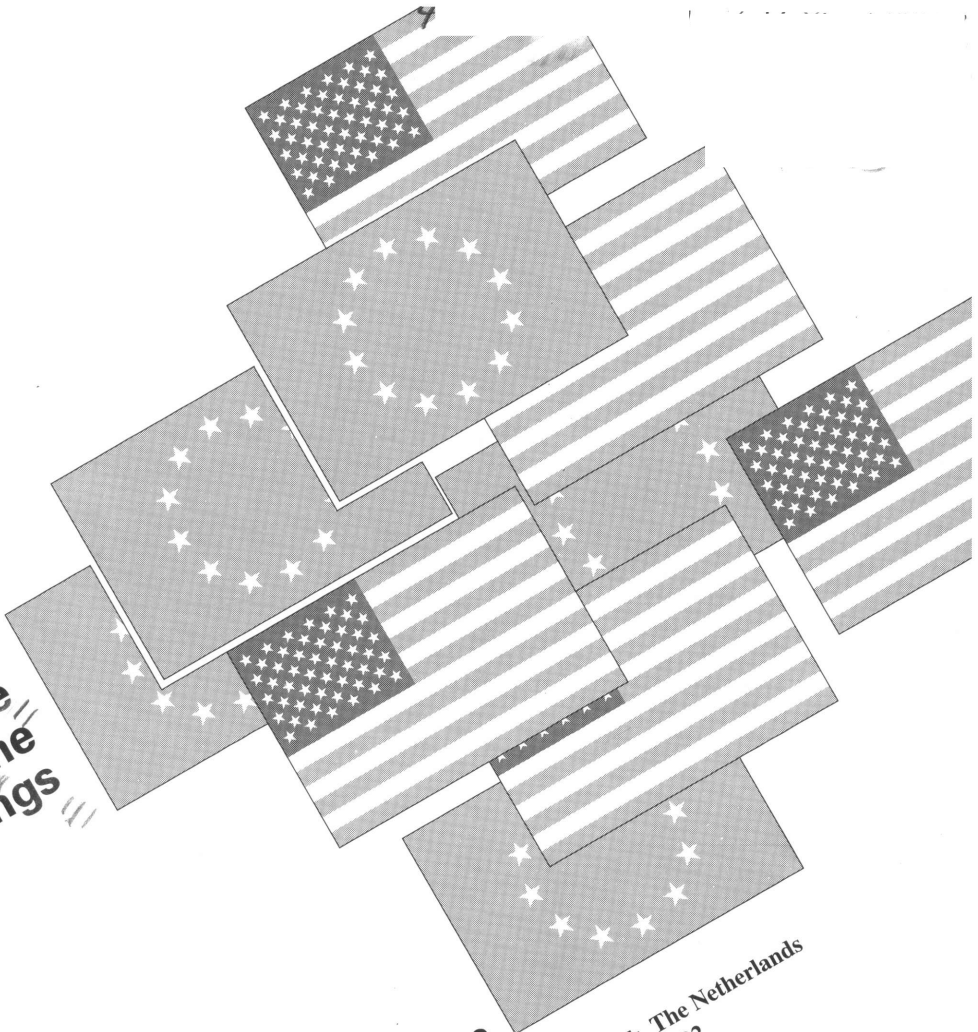
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**EC/US  
Conference  
The  
Proceedings**

**Schools and Industry:  
Partners for a Quality Education**

Noordwijk, The Netherlands  
25-26 June 1992

Organised on behalf of the  
Task Force Human Resources,  
Education Training and Youth  
of the Commission of the  
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in cooperation with the  
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International Cooperation in  
Higher Education



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## Opening remarks

*Hywel Ceri Jones*

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Mrs. Brand, ladies and gentlemen, it is a great pleasure for me to open our conference and to welcome you all on behalf of the Commission of the European Communities. I would like to give a warm welcome to all of you here, from both sides of the great water, but of course a very warm welcome indeed to all our American friends, and in particular to Betsy Brand and all her team of the US Department of Education. We are delighted that you have made the journey over. I am also happy to see that at this conference we have participants from several different backgrounds: from government, from the education institutions, and from both sides of industry--the employers and the trade unions. I am sure that this variety will greatly enrich our discussions.

What I would like to do in introducing our meeting is to touch on four points: the context of our meeting; the role of the Community in education and training; the issues before us as we see them in the Commission; and finally, our expectations for the outcomes of the meeting.

First of all, the context. This meeting owes its origin to the Transatlantic Declaration on relations between the European Community and the United States of America which was signed in November 1990 by President Bush and President Delors. That Declaration included the following passage:

“The partnership between the European Community and its member states on the one hand, and the United States on the other, will be based on continuous efforts to strengthen mutual cooperation in various fields which directly affect the present and future well-being of their citizens, such as exchanges and joint projects in education and culture, including academic and youth exchanges.”

Under the terms of this declaration, a joint EC/US working group on higher education and vocational training was set up that was given the brief “to increase transparency and mutual understanding of European Community and United States activities and programmes related to higher education and vocational and continuing training.”

In this framework the working group was to pool information and experience on the current situation and latest developments in these fields, including evaluations of international cooperation to date. When this working group met for the second time, in Washington in November 1991, we agreed to take partnership between education and industry as the focus for this first exchange of experience and to convene this first meeting in Europe this year. So this conference is in fact the first in what will be a series of joint events, and it forms part of a much wider effort which will include, we hope as of next year, a first pilot project of cooperation and exchange in higher education.

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It is clear that both in the United States and in the Community we are living through a period of considerable change and indeed uncertainty, as we look towards even the short-term horizon of 1 January 1993. In that context, the nature of the relationships between the EC and the US is also changing considerably, thus emphasizing the growing importance of economic, scientific, educational and cultural relations between us. Cooperation in education and training through interactive schemes of exchange of staff and students and joint projects such as this one will, we hope, help to cultivate the mutual understanding and mutual respect on which successful political and commercial relationships can be built. Given that often, certainly in the press, the relations between the Community and the US tend to be painted in a somewhat negative vein, notably in relation to some of the trading difficulties between us, I think it is important that we put a lot of effort, as a long-term venture, into our cooperation in the education, training and cultural spheres so as to cement the mutual understanding and respect for our respective values and interests. Closer ties between us can thus enhance the prospects for economic and social stability in the new world order.

Secondly, let me turn briefly to the role of the Community in education and training. I shall not, at this stage, go into the details of what the new Treaty on European Union, the so-called Maastricht Treaty, will mean, as and when, I will not say if and when, it is ratified. The position at the moment is that we are working on the basis of the Treaty of Rome, the founding Treaty of the European Community which was signed in 1957, and in particular on the basis of Article 128 of that Treaty, which sets out that the Community has the responsibility to establish common principles for the development of a vocational training policy. With that objective in mind, we have over the years, particularly during the last decade, progressively been trying to promote common understanding and joint action between the member states so as to improve and extend our vocational training arrangements right through every corner of the European Community. This subject, we all realize, has to be tested with a great deal of sensitivity and care because of the very rich variety of systems, of structures and practices in the member states. Indeed, a number of member states have within them considerable regional variations in arrangements for education and training. In view of this quite complex mosaic of education and training arrangements, the task of the Community in complementing national policy and in helping to bring the systems into closer cooperation is one that is necessarily to be handled with a great deal of sensitivity.

But I would say that on the Community stage the last few years have seen a growing realization of the importance of investment in

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human capital and in our education and training systems and that this issue has come more and more to the centre of the stage in our preoccupations. The approach we have taken at European level may be summarized in three ways. First, we periodically make proposals to promote the convergence of national arrangements and the coordination of policies through the adoption of common guidelines in the training field. Secondly, by playing the role of catalyst, we have been launching a series of transnational European programmes and projects. One example is the PETRA Programme for the initial training of young people. These transnational programmes are designed to support the common guidelines set at European level with the aim of developing the European character of national training arrangements and national systems of qualifications and of promoting more intensive cooperation between all the various parties in the training field. In particular we aim at involving in this process the social partners, that is the employers and trade unions, because they have considerable responsibility for training arrangements in the different countries. Thirdly, we have been setting in motion evaluation arrangements to assess, on a continuing basis, the contribution of the Community programmes both to European and to national objectives. Our aim in this respect is to pool the best of the experience that we have identified so as to have an impact on the mainstream of the different national policies and practices.

In policy terms this has meant that the Community is developing a capacity to respond to a number of key factors, which I will only headline here:

- economic restructuring;
- the globalization of firms and the rapidity of change in markets and technologies in the manufacturing and service sectors;
- the need to update and improve the skills of the adult workforce as the supply of young people coming into the labour market dwindles for demographic reasons;
- changes brought about, directly and indirectly, by the creation of the Single European Market at the end of this year;
- the need to fulfil the political and economic expectations of the next stage of development when the Maastricht Treaty, which will embrace both the concept of European Political Union and European Monetary Union, is finally agreed;
- the need to reinforce the role played by the social partners, since without their support and their active involvement training policy cannot be fully effective;
- and finally, the need to give a much stronger European dimension to education and training at all levels.

A stronger European dimension in education and training is not only valuable for this policy sphere in its own right, it is likewise important because of the contribution education makes to

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underpinning the development of almost all other spheres of public policy.

Alongside the training efforts that I have touched on, the Community has for a long time also been engaged in the education field. In 1976 a programme of educational cooperation between the member states of the Community was launched by the then nine ministers of education--by this stage there are twelve--which aims at pooling experience in joint projects on a wide range of issues. This programme of cooperation will, I hope, provide us with an excellent platform of experience on which to build once we move into the post-Maastricht phase of development.

Let me touch, thirdly, on the issues before us during this conference. Education and training systems are the backbone of our economy. Young people are a scarce and valuable asset. We are witnessing a gradual increase in the skill levels demanded of jobseekers and in the great difficulties encountered by those who have failed to complete initial training. The labour market situation in all the member states of the Community shows quite clearly that the highest unemployment rates and the persistence of high levels of long-term unemployment are linked to the mismatch between skill needs of firms and the skills available in the workforce. It is those countries that have been the least prepared for and open to qualitative change that are now experiencing the worst mismatches between supply and demand for jobs, accompanied by persistent exclusion from the labour market of underskilled groups and by a consequent upswing in long-term unemployment. The capacity to develop lifelong learning systems, continuing education and training, particularly at the workplace, has therefore a central role to play in the strategy for the future and in the development of an active society able to cope with the economic, technological, cultural and social changes of the 1990s and beyond and to face competition, not only from the US but from other parts of the world.

But it is not only a question of enhancing our competitiveness, it is a question as well of developing further Europe's cohesiveness, the social cohesion of the member states of the Community. By raising the standards and quality of education and training in every corner of the Community, we aim at creating the conditions in which people can have full, happy lives as active citizens. This is, I think, the true purpose of education and training and why it is such a central issue for us as we face the future.

With that in mind, we have in the latest period been concerned with three special issues. Firstly, the need to increase the return from investment in training. This raises the question of the conditions of access to and participation in vocational training, not just for young people, but for the entire workforce and for those who cannot get into the workforce during the later stages of their

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adult life. We are most concerned in Europe about the position of those who are going to work in small and medium sized firms, which after all make up the vast majority of work situations in the Community. How can we prepare young people to work in the smaller firms and provide them with the kind of core qualifications that will give them the flexibility and the multifold skills necessary to cope with the enormous changes they will face in the future: that is an absolutely central question for us.

Secondly, we need to improve the quality of training. In Europe this is not only a question of coming to terms with the frontier-free Europe envisaged by the Treaty of Rome and the 1987 Single European Act which complements the Treaty, a Europe which is characterized by four freedoms: the freedom to move capital, goods, services and people. We are also concerned with raising the standards of achievement and qualifications. Of great interest is the idea that is being developed in some of our member states as well as in the United States of setting targets which will ensure that technical and vocational training will avoid the problems of the past, where in particular vocational and technical studies suffered from a lack of steam in comparison with academic programmes, which have been more strongly supported.

Thirdly, we have been concerned with ensuring the transparency of the arrangements for vocational systems and qualifications in the member states. We need to recognize and be able to compare and contrast the different educational systems and the different arrangements for qualifications, particularly so that those people who wish to work in another member state than the one in which they were educated can do so without any impediment whatsoever. So at present we are engaged at Community level in negotiations about the next phase of our policy for improving the comparability of vocational qualifications. This will include setting up a transnational network linking up the different national databases on training and qualifications.

But in this conference, we have taken as our common aim the second of these three aspects, namely the improvement of the quality of training. Our discussions will focus on the tasks and the roles in the total training process of each of the partners: of governments, of both sides of industry and of the education and training providers. We are conscious that no single one of these actors can do it alone. Hence there is a need to look at the nature and the functioning of the cooperational partnership which is required and to try to see if the type of partnership action or policies which we now have in place in firms, in the different states and regions are sufficient and appropriate to the tasks and challenges that lie ahead.

Partnership means different things in different contexts and at different levels. It depends on the definition of roles, on the clarity



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with which can formulate each partner's responsibilities, relationships and functions. It depends, too, on establishing appropriate structures that can make partnership work and it involves the definition of tasks in terms of specifying the outcomes that we expect, so that we can measure and assess the effectiveness of the actions that we take. In looking forward to the remaining years of the 1990's, we firstly need to strengthen continuity and coherence between the different stages and levels of education and training so that the period of initial training can serve as the platform for developing a continuing education and training strategy, or, in other words, for a lifelong learning opportunity. Secondly, we need to encourage the application of partnership between industry and education, working and learning, taking in levels and sectors which have so far not been touched very much, including in particular some of the Cinderella vocational training institutions that have been somewhat at the margin of the mainstream efforts in the different countries. And thirdly, we need to encourage the use of education and training approaches which combine theoretical learning with practical application, at most, if not at all levels.

At this conference, we will have the opportunity to review a selection of developments, both in Europe and the USA, designed to move us forward towards these three goals. From the European experience, we have chosen presentations from two countries acknowledged to have training systems which are well established and, indeed, well esteemed in their own country and which many others take as a reference point for their own policy development. No system, clearly, is perfect but a lot can be learned from the way the Dutch and German systems serve their young people and at the same time the needs of business and the wider community.

Our third presentation comes from Portugal and is there because it represents a striking attempt to get away from the past and to allow totally new types of partnership to be formed and to develop, in response to a rapidly changing industrial scene and labour market. As such, the Portuguese example illustrates well the inclination of a government to put more power, and sometimes even money, into the hands of the other partners, especially employers, in order to extend and diversify the provision of training. The fourth and final contribution from the European side is from France, where there has been a long tradition of government policy--at the national, regional and local level--for involving industry in continuing education and training, and where the private sector has for many years made considerable investments in this area.

So then, finally, what do we expect of our meeting? In the plenaries and working group sessions, there will be an opportunity to examine the dynamics of recent developments in some European countries and in the United States. We will be able to look at the

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similarities and the differences between what is happening in Europe and the USA. Indeed, we can look at the possible transferability of good ideas and practices. In this way, I hope that we can come up with some answers to a number of questions which we have had in our minds, in approaching the conference. Let me just tell you the questions that we have been formulating.

1. Firstly, how far do the changes described help to clarify and define partnership roles and responsibilities in ways which meet better the requirements of a world-class workforce?
2. How are the changes described likely to contribute to the objective of greater participation in technical-vocational education and training, especially by marginalized and disadvantaged individuals and groups.
3. Do the new developments meet the need to offer well-structured, clear, and balanced choices of pathways and careers? Is there sufficient information and guidance before, during and after education and training, to enable the individual to benefit fully and succeed on the labour market?
4. Are the new developments contributing to raising the status and desirability of technical and vocational education and training as compared with traditional, prestigiously perceived, academic courses?
5. Do the arrangements contribute to a better sequencing and progression from one stage of education and training to the next?
6. What aspects of quality do the new developments emphasize and aim at? How is quality of process and outcome determined? Do the performance standards set by education connect well with the skills standards set by industry?
7. Finally, do the arrangements contribute to meeting industry's perceived need to achieve a rapid response to technical and market changes?

These then, are some of the questions in our minds. I look forward very much to our discussions. I hope they will be enjoyable, stimulating and indeed sometimes even confrontational. ┘

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## Opening remarks

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This conference is about partnerships, and today we need to recognize that we are beginning a new partnership with this conference.

I would like to recognize Hywel Jones and the fine staff at the Task Force on Human Resources, Education, Training and Youth that have been involved with us, as we have undertaken this new partnership. I think we need to recognize that we have begun something very important between the United States and the member states represented through the European Community and we hope that we can build upon this successfully over the next few years. It has been an exciting process so far. We have had wonderful discussions and perhaps one of the most encouraging things to me is that, while we may use different words when we describe issues and the problems that our countries all face, basically they are the same issues that we're facing; we have the same demographics; we have the same challenges and if you can get through some of the words, both American and European, I think you will find that there is a tremendous amount of common ground that exists between the US education system and the education systems in Europe. We can learn a great deal from each other as we try to solve our problems.

It has helped me to spend some time in Europe to get to know many of the individuals here, and I hope that over the next day and a half the American delegation will have an opportunity to understand more about the programmes here in Europe. I think, by influencing each other's thoughts and decisions, we can continue to improve our programmes.

On behalf of the American group, thank you, Hywel, for this splendid facility; for picking a beautiful spot for all of us to enjoy; and for organizing such a wonderful conference. We look forward to reciprocating next year, when we will host a conference in the United States between our two organizations, on a different topic related to vocational and technical education.

This morning I don't want to take a lot of time because we would like to hear from the experts and to get you all engaged in a debate. But I want to give you some idea of what is happening in the United States with regard to educational reform, specifically in vocational-technical education, so that participants have a better understanding of where we are coming from.

There has been a lot of focus on education reform over the last ten years in the United States. Many efforts have not been entirely successful. But where reform efforts are tied to partnerships they have had a much better chance of succeeding. The education reform movement in the United States has been, in my opinion, driven mostly by business, and to me that's good. We need to have business telling us what it is that our schools should be doing; what types of products we should be sending out from our education and training institutions, but that connection with business has not

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always existed. It is being developed now and it becomes the underpinning, I believe, of what we need to achieve in education.

We've recognized that business is driving a lot of the changes in the United States. And the reasons are very similar to the ones that Hywel mentioned a few moments ago. We have a declining supply of workers; we have more technology coming into our firms; we have firms changing their work structures and work organizations, and we are realizing that it is difficult to compete, and that human capital becomes one of the most important aspects in that competition. Our businesses are sending the signal, loud and clear, to our education and training systems that they need multi-skilled workers and finally the message is getting through.

There is a recognition that the US has done an excellent job teaching and preparing the top twenty-five percent of our student body that goes to a four-year university or college. Most people recognize our university system as a very excellent and high quality system. And we were content to live with that for many years. But again, for economic reasons and demographic reasons, we are unable to focus solely on the twenty-five percent that graduate with four-year degrees. We obviously now must focus on all of the students leaving school. There has been a wide acceptance, in the United States, of the need to focus on the work-bound youth, or non-college-bound student. Every state and governor in the United States has recognized this need. The governors of our states, through their chief education officers, have put out a statement on the work-bound youth and focusing on building transitional systems as one of their highest priorities over the next few years.

The federal government traditionally has had a very limited role in education. The federal government in the United States funds education to the tune of about seven percent of all the dollars in education. It's a relatively small contribution. The states and localities fund the rest and the states have the Constitutional authority for education in the United States. So what is our role at the federal level, since we have such a small percentage of the pie, if you will? I heard Hywel use the word "catalyst". We believe that we are the catalysts for change; that we must be the catalysts for change, and that we serve the right people; bringing them together at the table; having them discuss the right issues. The issues have been framed well in the documents that you have received in preparation for this conference - I don't need to go through those. But we feel that the process of bringing people together, to begin a partnership, is critical. And we feel that we need to become much more active in that area. We have to serve as a catalyst for change, for setting high standards and measuring the quality of our education programmes. In the past, the federal government in the United States has never undertaken that role of measuring quality. We had a role to guarantee access; to ensure that the disadvantaged

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and disabled were able to enter our system, but we did not really care much about the quality of programmes until recently. And that has become a primary interest of the federal government and will continue to be so. There are many ways in which we are beginning to manifest this interest. The most clear area is in the development of standards; both standards in academic curricular areas, covering English, math, science, history and geography, but also in the development, working in a partnership with business, of industry specific skill standards, so that our workers and those of us who need to return to education and training have an understanding of the skills that are required to be effective in the workplace.

We are committed to the notion of lifelong learning and continuing training. We believe that it is a tenet to ensure a strong and viable economy in the United States. We have put out new proposals in the area of lifelong learning and I want to mention a few of them to give you a flavour of the direction we are going in.

In addition to ensuring quality and measuring quality, we want to try to develop a coordinated system of education and training services at the local level. It is impossible for us, at federal level, to coordinate, in many ways, fifty unique states and thousands of unique communities. And in the United States, we recognize that that diversity, and the innovation that occurs at the local level, is a strength - not a weakness. By developing national standards we can help to pull that system together, but we must recognize that through communities, and community by community, partnership by partnership, is the only way for us to proceed in the United States. It is a difficult task to, again, pull together fifty states and yet it is even more of a difficult task to even consider the concept of developing a system that would cover every single different community throughout the United States. But we have recognized the need, again, to coordinate and we will put systems in place that would encourage communities to pull their systems together. We will remove barriers at the federal level so that can happen. We will promote additional funds to adult learners, for adults to return to education and training for a single course of study that is occupationally related. And we are also promoting the notion of expanding the types of providers of education and training we will fund so that we could include the private sector and the for-profit sector to be providers of education and training.

There is a large job to be done to train our workforce. If we all believe in lifelong learning, we need to ensure that we have as many different providers of education and training as possible in our system to meet the demand. We want to encourage that; we want to encourage the multiplicity of providers.

At the same time we want to hold them to very high standards of accountability. And that is the critical role we have carved out for ourselves.

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More specifically, in vocational-technical education, you will hear over the day and a half, as Hywel said, some exciting new developments in the United States that move toward coordinated local systems, partnerships, and how to measure quality of programmes. Some of these partnerships are manifested by programmes called “Youth Apprenticeship”, “Tech Prep” and other forms of vocational-technical education, such as cooperative education, internships and academies.

The partnership between business and education is critical. Of everything that is going on in the United States, it is that partnership that has made the most change, and without that we will fail. And I am very pleased by the turnout on the American side of the representatives from the private sector and we have some very fine, small and large, firms represented here. I am very pleased that all of you were able to take time out from your schedules to be with us, to help share your concept of education and training, and to further the debate. The private sector has been the driving force behind reform in education in the United States, and I, for one, certainly hope that they will continue to do that. If there is a goal from our side, for this conference, it is to begin a dialogue with all of you and for you to carry it on yourselves, in any way that you can.

But it is also for you to tell us the most important priorities for us to pursue in joint activities. We have a lot of ideas of things we could carry out. We’re anxious to find out from all of you, and from our speakers and facilitators, what the priorities are that we can focus on that would have the largest impact on all of our systems, across all of our countries. We certainly hope that you will help us in deciding those answers.

I wish you good luck for the next day and a half. We have a tremendous agenda and an awful lot to do. You will be busy, you will be tired, but you will be energized after this conference and we hope that you will take some of that energy back to your communities and use it productively to improve education for all of our students. Thank you very much. ┘

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## Cooperation between Dutch industry and schools in secondary-level vocational education

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It may be useful first of all to give some brief information about my company. Philips Machine Factories is a private enterprise within Philips. 'Machine Factories' is awkward in translation, but it refers to high-end engineering works, producing parts, sub-assemblies and complete equipment. Annual turnover is approximately \$200 million. The total labour force is 2500 people, of whom 2000 are based in The Netherlands. Philips Machine Factories employs people who, at the very least, after completing their junior secondary vocational education, have then had several further years of training under the apprenticeship system.

Back in 1928, the Machine Factories was the reason behind the introduction of an officially recognized Philips company training scheme. Around thirteen thousand students have since benefitted from this scheme. The nature of the training has changed several times in the intervening period, due to economic and social developments.

Since the start in 1928, Philips has participated, at both national level and in almost all regions of The Netherlands, in cooperative ventures in the sphere of education, both with respect to administration and content. At regional level, however, the emphasis has been on junior and senior secondary vocational education.

The Netherlands is a country of farmers, salesmen and clergymen. Despite the presence of a great deal of industry in the country, we are on the whole far less industry-minded than the countries which surround us.

When I was asked to contribute to this conference, I was rather doubtful: I thought that I lacked an overall view of developments in education. Indeed, one of the essential problems is the multitude of developments in education which are taking place and which we, in The Netherlands at any rate, all have to follow. However, I agreed to make this presentation because I am also considered to be in a position to offer advice to the Dutch Minister of Education on these same developments as a member of ARO (Advisory Committee to the Minister of Education). My focus here is on junior and senior secondary vocational education, and I am presenting my views on cooperation between Dutch industry and schools as an industrialist, not as an education expert. I have received considerable assistance in the preparation of this presentation from Mr. Wouter van Bruggen, Human Resources Manager of Philips Machine Factories. The terms 'school' and 'industry' are in fact simplifications for three highly complex networks: the government, the schools, and the business community. For government, for example, certainly at

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regional level, industry cannot really be approached as a single entity because The Netherlands is full of small and medium-sized businesses. For industry, for example, in view of the large number of developments taking place in education, contact needs to be maintained with a large number of educational establishments.

While on the one hand the vast number of changes can be worrying, I do consider a number of developments in the Dutch education system to be very positive, particularly the clearly perceptible rapprochement between schools and companies at regional level. New contacts are being forged with increasing rapidity.

### **Current structure of the Dutch education system**

A committee of OECD experts indicated in its final report in 1990 that The Netherlands had a fairly costly and very extensive education system, but that coordination between the various factors and subsectors left something to be desired. The experts characterized Dutch society as one with a 'constructive' education policy. This has however, in their opinion, led to too large a number of radical changes in the structure and content of education. The Committee believed that the large number of changes was posing a serious threat to the quality of Dutch education.

The committee recommended to the Minister of Education that a rest period of five years be enforced. It did, however, make an exception for two fundamental changes - the introduction of basic education and the restructuring of vocational education. I will consider both changes from the viewpoint of the changing relationships between schools and industry. First, however, I would like to take a brief look at junior secondary vocational education and junior general secondary education. These are the schools from which young people flow into specialized training at Philips and other industrial companies.

### **Junior secondary vocational education and junior general secondary education**

I will limit myself to two trends. First, an undervaluation of the traditional trades has gradually developed in The Netherlands. Many people have a picture of dirty and badly paid work performed under poor working conditions. They fail to see that it is often a question of very varied work calling on a combination of practical and mental skills - in other words, working with head and hands. Companies are partly to blame for this situation because they have not been open and active enough in approaching children, parents and schools.



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Secondly, children are often pushed by parents, who want the 'best' for their offspring, to opt for a higher form of education than they themselves enjoyed and at the same time to opt for general education in order to put off the choice of a career for as long as possible. This leads, on the one hand, to a decreasing number of pupils in junior general secondary education and junior secondary vocational education and an increasing number opting for non-technical careers and, on the other hand, to a large number of dropouts from the education system (ie children who have aimed too high or, through the lack of practically oriented education, have fallen by the wayside).

At this point it is useful to consider the apprenticeship system. After a period of growth since 1982, there is now a total of around 130 000 apprentices in The Netherlands, which is less than 10% of the total number of pupils in secondary education.

Within this sector there has traditionally been close cooperation between employers, labour unions and the government, which extends far beyond purely administrative cooperation. Considerable attention is also given to the content of training. The contacts between industry and schools seem especially good in this sector. However, the number of dropouts is far too high - on average, 50.6%.

### **Introduction of basic education**

In June 1991 the Lower House passed the bill on basic education, seemingly bringing to an end a debate which had been going on for several years. It was not until very recently, however, that the Upper House gave the go-ahead for this bill, after fierce debate, which in fact led to constitutionally disputable changes in the bill.

This new legislation concerns a fundamental change in the content of our education. The structure of the education system will stay as it is, but from 1993 all pupils in secondary education will have to follow a core curriculum of 15 subjects. Obviously, the quicker learners among the pupils will require less time to complete the curriculum (two years) than the slower learners (four years). One of the Minister's objectives in introducing this basic education is to postpone the choice of career to a later age. A second objective is to improve the position of junior secondary vocational education by incorporating it in broad school communities in combination with general secondary education.

The components of the core curriculum are shown in Table I.

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**Table I**

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*Basic education core curriculum*

- (1) Dutch language
- (2) English
- (3) A second modern foreign language
- (4) History and politics
- (5) Geography
- (6) Economics
- (7) Mathematics
- (8) Physics and chemistry
- (9) Biology
- (10) Information science
- (11) Technology
- (12) Music, dance or drama
- (13) Physical education
- (14) Art and handicrafts
- (15) Care (personal, plant and animal)

The introduction of the subject 'technology' is encouraging. This will contribute to a positive attitude to technology and help to promote the choice of subjects on the science side. In preparation for the introduction of basic education we at Philips Machine Factories are already assisting a number of junior general secondary schools in the Eindhoven area in equipping their technical rooms. We are also helping them to put together teaching material and training their lecturers. The reactions have so far been very positive.

At the same time we are concerned about whether the more practically oriented students will be sufficiently motivated by the predominantly cognitive curriculum. A practically minded student with good learning ability may run the risk of drifting into a too low level of vocational education.

**Broad school communities**

In order to offer the students a genuine choice, the Minister wishes to enforce the establishment of broad school communities, in

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which both general education and vocational education are represented. Although there are many objections to such large schools, I am in favour of this development. For companies, this represents a new chance to build up relationships with general secondary education, on the one hand with a view to increasing awareness of careers in industry and on the other hand to provide support in the creation of an adequate and contemporary curriculum.

### **Rauwenhoff Committee**

Every now and then a committee is formed in The Netherlands with the task of generating a number of unorthodox ideas relating to a certain subject. Thus in 1989 the Rauwenhoff Committee was created by the Minister of Education with the mandate to investigate the link between education and the labour market. The Committee performed its task with great enthusiasm and in 1990 came up with a large number of recommendations. I shall limit myself here to a brief summary of the Committee's analysis and some of its recommendations.

#### *The Committee pinpointed the following:*

Growth in employment and decrease in the demand for unskilled work.

Growth in demand for technical personnel and diminishing supply.

The very poor job opportunities for unqualified workers.

Concentration of education in the young age groups.

The large percentage of young people failing to complete a vocational training course (30%).

Too much central legislation, meaning that the autonomy of schools is very limited.

The Committee established that there was a concurrence of developments, and that the poor functioning of the link between education and labour market was just one of them.

A solution can be achieved only through improved cooperation between all the players (government, industry and schools).

#### *Recommendations*

The Committee has issued one series of recommendations for the establishment of relationships between companies and schools in the sphere of secondary education and another series of recommendations to make the schools significantly more independent of the central authorities.

A number of recommendations concern the obligation of each sector to inform the other with respect to new developments and requirements.

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There are two clusters of recommendations which have attracted considerable public interest. The first cluster concerns the apprenticeship system and includes:

The introduction of the apprenticeship system's dual character of working and learning into the standard senior secondary vocational education system.

Recommendations that all pupils be educated at least to the level of apprentice skilled worker and that those who fail to achieve this be offered the chance again later on. (Here I have my doubts: can all students reach this level?)

The second cluster concerns the independence of schools:

The Committee recommends that schools be given more legal and financial freedom. It must also be possible to organize training courses for companies on a for-profit basis. It also recommends that part-time and full-time education, the apprenticeship system and the official occupational retraining institutes, be integrated within the vocational education system.

The above recommendations are certainly breaking new ground. There are a few stumbling blocks: for example, how is the dual nature of the apprenticeship system to be transferred to the rest of the vocational education system? What is remarkable, however, is the speed at which the Minister is putting a number of the Committee's recommendations into practice.

### **Formation of regional training centres**

The Minister has started a gigantic operation which, by the year 2000, is to result in 28 Regional Training Centres (ROCs) in The Netherlands, accommodating around 700 000 students. Every two years, the Minister will conclude covenants with relevant partners in order to make agreements on interim steps and responsibilities.

*A Regional Training Centre must comprise at the very least:*

An institution for adult basic education (second-chance education).

A school for general secondary adult education (also second-chance).

A school for short secondary vocational training courses for young employees (previously apprenticeship system).

A school for senior secondary vocational education for at least three of four sectors: technology; agriculture; economics and services; care.

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Sociocultural training institutes for young people should also form part of the ROC. Instruction will be given both during the day and in the evening. The Centre will also organize occupational retraining activities on behalf of government or industry. ROCs are often compared with the community colleges in the USA, which also offer a very varied range of studies.

In his reasoning for this development, the Minister makes liberal use of the recommendations of the Rauwenhoff Committee and every other failing of the Dutch vocational education system which has ever been observed.

Although the independence of the ROC appeals to me, as does the scope which is offered for the formulation of standard and special training activities in cooperation with industry, the formation of the ROCs fills me with concern. It is, however, a challenge to industry, schools and government to structure the ROCs at regional level in such a way that the disadvantages are eliminated.

The concern is this: industry endorses the Minister's basic objective to coordinate the various learning paths in vocational education, which is urgently required, but it is anxious about the emphasis which the Minister is placing on the mergers between a large number of institutions in order to achieve his goal. The fear is that this will lead to a predominance of administrative and employment-related aspects over the actual content of education during the next ten years.

We would have preferred to see the emergence of two clusters: vocational education (senior and short-course secondary vocational education; the apprenticeship system); and basic/general education. In our view, there is no link between these two clusters.

We are also afraid that the ROCs will become so large and broad that it will become impossible for them to find the energy to set up a network of contacts with diversely structured industry. The old network of contacts of the apprenticeship system will then be lost.

As there is some degree of regional freedom in the establishment of the mergers, we will try to promote those which are limited to vocational education.

### **Concluding remarks**

Dutch vocational education, then, finds itself in the midst of a flood of changes which, in our view, are not all necessary. We

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endorse the merging of the various learning paths within vocational education in respect of content and the efforts to make the education system more easily accessible for the pupils (formation of ROCs). However, the scale of the mergers, bringing together completely different types of education, fills us with concern. The selection of subjects which will be offered within the basic education provided by the school communities, appeals to me very much. Perhaps this will enable us to exert a positive influence on the diminishing interest in technical training courses. Within the school communities the too rigid division between general secondary education and vocational education can be lifted. There will also be opportunities for industry to establish better relations with the education system.

Philips Machine Factories is working on a regional basis with initiatives deriving from the formation of the ROCs and basic education. Our size allows us to do this. However, within the highly diverse structure of industry we will have to find a response to the many challenges which are presented to us by developments in education. ┘

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## Responding to the skills gap - The Boeing Company and Tech Prep

*Carver C. Gayton*

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My purpose here is to provide a case study of what the Boeing Company is doing: some of the problems we are experiencing and some of the directions we are taking - and then to talk more specifically about Tech Prep.

Although the Boeing Company remains the number one commercial aircraft company in the world, and the number one exporter in the USA, there are some major obstacles that the Company has to overcome, both internally and externally. In essence, in order for us to remain competitive we must look at more and better ways to cut costs and at the same time improve our processes, products and our services. That is the major challenge before us.

Some of the industry's specific factors that make it difficult for the Boeing Company to be competitive are:

- First of all Government subsidies to airbus industries place the Boeing Company in a competitively disadvantaged position. We would prefer, as a company, to be on an even playing field. I know that the airbus industries have another perspective on this issue, and we hope that the differences will be worked out. However, although we feel that the government subsidies put us in a difficult position we have to continue regardless of that situation.
- There are substantial costs to the Company attributable to environmental regulations. We are not against environmental regulations at all, but over the past two years the costs have risen by 115%. Most of those costs have gone primarily to record keeping and training, and that adds on to the price-tag of the aeroplanes that we sell.
- Health-care costs for employees have risen by 55% between 1988 and 1991. This is a problem that we are attempting to resolve with the Government and each of the presidential candidates is talking about health-care costs - I am not sure which one has the right answer, but again this is a problem which impacts on the price-tags of our aeroplanes.
- We have multiple certification of our aeroplanes in nations where we sell them and this is a cost factor that we must deal with. In other words, if we sell an aeroplane to The Netherlands, we have certification costs that relate to the government guidelines and we also have certification costs that relate to the airline that we sell to. This is a substantial cost.
- It is also important to note that our training costs within the Boeing Company have risen considerably over the last three years.

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In 1987, we spent about 68 million dollars on training - in 1991 we spent about 300 million dollars on training. And this cost will probably continue to rise. If we do not meet the needs for skilled people through training, we will have to do what we did a few years ago when our 747 400 went into production: we had to go outside the State of Washington, where the Boeing Company is located, and we had to bring in about 400 employees, technical employees, who had been laid-off from McDonald-Douglas. If we had a 'pipeline' from our schools that was continually bringing skilled people directly into our company we would not have to take such action, but it appears that we will have to do the same thing when it comes to the production of our 777 aeroplane. Hopefully, programmes like Tech Prep will begin to deal with some of these issues, but the fact remains that we do not use our secondary school system as well as we could and that is a problem that applies across the USA.

Some of the other factors that confront US industry as a whole should also be mentioned. For example, if you compare the recent math and science scores of US students at the ninth grade level, (thirteen year olds), with those at similar grade levels in other industrialized nations, you will find that US students are very low in the ranking. This reveals a major problem facing us in relation to the development of skilled people. Furthermore, new entrants into the workforce are going to be primarily women, minorities and immigrants (they comprise about 70% of new entrants into the workforce between now and the year 2000) and these are the groups which historically have had most difficulty acclimatizing to high-tech environments. So we have some challenges in this respect if we are to be competitive.

Technology is changing at such a rapid pace that now more than ever we need workers who can problem-solve, think critically and adapt to rapid changes in technology. Good attitudes alone in our employees will not suffice.

I conducted a survey for our vocational education department for the State of Washington a few years ago on a consulting basis: the view that came back to us from business was that if employees had good attitudes, if the graduates from the vocational programmes of the secondary schools had good attitudes, they could be trained to do the jobs required. We are now finding that you have to have more than just good attitudes - you have to have the basic skills. It is also important to note that about 80% of young people coming out of the US education system go directly into work or a community college: only 20% end up with a Baccalaureate Degree. However,



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the focus tends to be on those students who are expected to go on into the university system - even though they comprise only a small percentage of the total. With regard to the education reform movement in the USA, most of the reports have focused on those students going on into the four-year institutions. We have a problem with what Dale Parnell, the former Executive Director of the American Association for Community Junior Colleges, calls 'the forgotten majority'. We have many students who really do not have a sense of what direction they should be taking. This is a major problem, which, as will be shown, Tech Prep programmes will begin to deal with.

The rate of poverty amongst children is three times greater in the USA than in other major industrial nations (according to the National Centre for Education and the Economy). This limits our ability to compete because of the need to expend funds on remedial programmes for these children.

The Boeing Company is not simply sitting back, wringing its hands, and bemoaning the fact that these problems are upon us. We are promoting a number of programmes within the Company. Like large manufacturing companies across the country, we are focusing on things like team-building: we are moving away from the authoritarian kind of relationship that the manager traditionally had with the organization. We need to emphasize this team approach, with the manager working more as a 'coach' or leader, and depending on the knowledge that individuals have within the organization. People within these teams must also have an understanding of the interdisciplinary aspect of what they do.

With the building of our new 777 aeroplane, we started what we call 'design build teams'. Rather than have the engineer come up with a design of some aspect of the aeroplane and then pass it over to the technicians, who look at it and say, 'We don't understand this - there is no way we can build it' and push it back to the engineer, etc, etc (substantial costs and time are involved in that kind of process), we are bringing the technician, the engineer, the accountant, the human resource person and the customers together, to design our aeroplane of the future. Each has to have an understanding of the other even though their areas of expertise are different. So the interdisciplinary aspect of what takes place within a large company like the Boeing Company is extremely significant.

The whole concept of 'continuous quality improvement' is also very important. The idea behind this is that you do it right the first time, and ensure that you continually attempt to improve on your processes. When I first joined the Boeing Company, the attitude was 'If it isn't broken - don't fix it'. That has been turned

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completely on its head. Now we are saying 'Whatever you have, whatever process you are involved in, it can be improved, you can continuously improve, you can always improve, you have to improve'.

The whole concept of the 'customer' has changed over the last few years. We are not thinking only in terms of the external customer and the importance of that customer, but of relationships within the company - the 'customers' we work with inter-organizationally are extremely important, and this attitude relates to the concept of continuous quality improvement.

As I have already mentioned, another key challenge is to develop employees to adapt to rapidly changing technology in such areas as computer-aided design and computer-aided manufacturing. The design of our 777 is using what we call 'catia software': the entire plane is being developed through this software, at least in terms of design. We are also emphasizing robotics much more than we have in the past. The general use of the computer has revolutionized what we do within the Boeing Company. When I first joined the company, twelve years ago, almost all the secretaries were working on electronic typewriters - there were very few word-processors. Now it is difficult to find anybody using an electric typewriter in the Boeing Company.

The activities mentioned above begin to attack the internal issues that we face within the Company. However, industry and society as a whole have an even greater challenge, which will ultimately determine the business community's ability to compete - that is, to correct the ills of the education system. I have already made some mention of some of those problems. Because of these educational concerns, over the past six years or so the Boeing Company has become involved in a wide variety of educational programmes. Our Chief Executive Officer, Chairman of the Board, and President, Frank Shrontz is involved locally, state-wide and nationally in educational initiatives and he is committed to working with the education community. Our perspective has changed over the years. Initially, our primary focus was on working with the universities and colleges exclusively. We thought we could go in and give the business perspective, do a 'quick fix', and then come back out. We now see that we must have long-term commitment, working in partnership with the education community, to make the necessary changes that will benefit all of us.

Of the various activities underway in the Boeing Company, we are especially proud of the applied academic Tech Prep programme that we launched about three years ago. In short, applied academic

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classes provide an alternative to those students in high school not focusing on a college preparatory programme - rigorous competency-based, hands-on, applied academic courses in physics, math and communications. Most of these courses have been developed through the Centre of Occupational Research and Development. We are concerned here with a direction other than the academic, but the rigour is still present. The students who take such courses usually do not have the intention of completing a Baccalaureate degree - however, there is a good fit between the programme and the associate degrees offered by the community colleges. This is what we call the 'Tech Prep connection'. Through the Tech Prep model students can take applied academic courses in their junior and senior years in high school, and receive credit towards completion of their associate degree. There is some concern, at least in the State of Washington, that if a student goes from a secondary school into a community college the money will go with that student. So the Tech Prep connection to which I am referring is when the student remains in secondary school, takes those courses, and obtains credit towards application for his or her associate degree.

The Boeing Company is convinced that the Tech Prep approach is the most comprehensive of educational processes, in that it integrates vocational and academic studies to prepare future work-ready employees. It may be helpful to outline our specific involvement in Tech Prep. In 1989, we formulated the objective of doing as much as we could to enhance vocational education within the schools. We sent out a proposal to every school district in the State of Washington, asking them to come back with details of how they would initiate an applied academic programme. We said that for every dollar that they put into that programme, we would put in a dollar and a half, up to thirty thousand dollars. Most of the money was to be used either for course-preparation time for teachers or for equipment. Twenty-one school districts responded. We spent about \$470 000. An additional twenty-one school districts were funded the following year for about the same amount of money. We provided support only for about ten school districts this past year because of the involvement of Carl Perkins money (this is a federal programme to enhance Tech Prep programmes throughout the nation). We have been able to provide a model for what we see as a positive direction, and there has been significant interest in participation in these programmes. As a consequence, we have not had to contribute the same amount in grants this past year.

During the past two summers we have also invited teachers who have taught applied academic courses into the Boeing Company. They have worked in our manufacturing areas for a period of six

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weeks, and have been paid a stipend. After that period they have made a report to our operations managers, and indicated how they would take what they had learned back into the classroom. We also have a consulting agency, which reviews how they have actually integrated the lessons learned in the workplace into the course teaching. This is one way to familiarize the teachers with the kind of activities that take place within the Company.

Another leg of our applied academic stool is the provision of support for community colleges. We have provided funds for selected community colleges to have their teachers work with teachers in the secondary schools to develop what we call 'articulation grants' for developing courses that both the community colleges and the schools can use - and the students, as mentioned previously, are able to obtain credit towards an associate degree after taking these applied academic courses. Once they have taken these fundamental courses, the focus moves to more direct, skill-related courses in the community colleges.

We have spent about two million dollars on this project since it was launched. As mentioned earlier, we have a team of operations managers within the Company which establishes the guidelines for the programme. Each of the divisions has an operations manager who works on this team effort to establish the guidelines, to look at the courses offered, review our relationships with the community colleges, work with the teachers who are coming in during the summer, and give us some direction as to how we should continue to move the overall project.

There is one aspect of the whole programme which we have not yet initiated - the provision of internship programmes, or 'apprenticeship programmes', for students at the ages of sixteen and seventeen. I think it is important for us to look at this. We can have an effective programme without this aspect, but my view is that if we are really going to do the job properly, we should bring in students during their junior year. Historically, within the Boeing Company, we have not brought students at that age into the company. In fact, we have about seven hundred employees between the ages of eighteen and twenty-one working within the Boeing Company, out of a total of one hundred and fifty thousand employees. We get most of our employees from smaller businesses: people who already have experience and skills. If we are going to continue to be competitive we have to begin to focus on that high school level, and provide work experience for these young people. I think this is the missing leg of the stool.


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In conclusion, I would like to point out some of the outcomes of our efforts. First of all, close communication is taking place between the private sector and the education community - the kind of communication that really has not happened in the past. We have cooperated through advisory committees but that is a perfunctory kind of relationship. Now we are getting on with the education community, and developing these programmes - and businesses are more willing to hire graduates if they have been directly involved in shaping what has been taught. There is a wide involvement of all sorts of players in this activity: I have mentioned some but I think it is also important to note that we have talked with union representatives, people from the trade schools, and people from the vocational administrative bodies within the State of Washington to give us guidance and direction with regard to this effort. We are open to a wide range of perspectives.

The academic and vocational faculty are discovering their mutual needs and concerns - there is more teaming between the vocational and academic teachers, and some of the traditional barriers are being broken down. We are seeing equivalent credits being awarded for equivalent outcomes: the higher education institutions tended to see these programmes only as vocational credits. We took steps with our higher education coordinating board to change this. We found, for example, that the physics professors at our four-year institutions had no idea what was taking place within the applied academic classes. They had just assumed that, since they were in the vocational education department, they really were not of much value. However, when we invited physics professors to come out and look at the courses, they discovered that there was probably more physics being taught in the applied class (the 'Principles of Technology' class) than in the physics courses that they had been approving for lab science over the years. Now, any student taking the applied physics courses can go into a four-year institution and obtain credit towards lab science. Beyond that, if a vocational and an academic teacher come together and agree that there is academic equivalency within a vocational course for entrance into a four-year institution, that will be accepted. These are major changes in relation to the way in which higher education views vocational programmes. The vocational courses must have this kind of credibility if they are to be effective. Students will be able to make the transition, if they wish, from a vocational to a four-year programme, even though the Tech Prep emphasis is still on the community colleges.

Finally, it should be emphasized that the Boeing Company is not unique within the business community in wanting to work with the community colleges in developing Tech Prep activities. What we

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wanted to do was to provide an example, or model, to show that this kind of collaborative effort can work. We are not saying we have all the answers: we are just at the beginning, but there are already many positive developments. We are not relying on the same old approaches - we are talking about real partnerships. Tech Prep in the USA is an idea whose time has come and we are pleased that we have been able to help provide the whole concept with some well deserved visibility. The next step is to institutionalize Tech Prep, so that it becomes a widely recognized aspect of our education system. ┘

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## The dual system in Germany-Advantages of cooperative models of vocational training

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The characteristic features of the dual system of vocational training in Germany<sup>1</sup> are well-known by both our European partners and by many experts from the USA, since we at the Bundesinstitut für Berufsbildung (BIBB) have been exchanging views internationally on dual vocational training for many years. Consequently, I shall not go into a historical or systematic description of this system here, but shall rather expound the constituent characteristics of the dual system against the background of new national and European tasks, and shall in particular broach the question of partnership.

We are currently conducting a controversial discussion on the dual system in Germany, where two extreme positions are at loggerheads. The proponents of the system point to the high quality, numerous successes and established proven worth of the dual system and recommend 'exporting' it to other countries. In the other camp, although they acknowledge the achievements of the dual system in the past, fierce critics contend that it has no future. They describe it as an 'outbound model', whose potential for innovation is spent. The proponents stress the repeatedly proven flexibility and adaptability of the system and have no doubt about its continued existence.

Overall evaluations are not very effective in clarifying the problem and are useful only in so far as they serve to stimulate new thinking on old principles. I should therefore like to address the question as to which characteristics of the German vocational training system will still be valid in future and what changes and new elements must be introduced in order to meet the challenges of the next decade. First, let us have a closer look at these challenges.

### **1. New challenges**

Germany as well as all other member states of the EC must make basic and lasting efforts to cope successfully with the new challenges described below, many of which are, I believe, also relevant for vocational training in the USA.

- 1 A prerequisite for an effective human, social and ecological organization of our living and working environment is the development and utilization of human resources. This means that every young person or adult who so desires must be given the opportunity of high-quality vocational training so as to obtain a wide range of marketable qualifications and to develop his or her individual personality further. To reach this objective heavy investments are required for vocational training which can only be made jointly by the government and industry.

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2. We will have to deal with further rapid structural as well as technological, social, and work-related changes, perhaps at an accelerated pace. Dynamic, increasingly unpredictable surroundings, and hardly foreseeable developments will require even greater flexibility, preparedness to face risks and more uncertainty as well as a preventive provision of a flexible, high-quality human qualification potential which can be mobilized at short notice. Individuals must therefore become more basic, broader, 'more open' and in many cases, higher qualified, in order to be able to perform changing and complex tasks properly and to make a competent contribution to the organization of the world of work. Vocational further training is thus indispensable and must be promoted.
3. The internationalization - or better still, the globalization - of economic and vocational matters continues to progress. Consequently, knowledge of the socio-cultural and legal conditions and particular features of other countries, proficiency in foreign languages and trans-boundary technical qualifications are becoming ever more important for the promotion of mobility, cooperation and the transfer of know-how.
4. A demographic shift is shaping in the employment system. The number of young people among the gainfully employed will drop considerably in the years to come. As a result, the continuous expansion of qualifications relative to technological and organizational changes, to product and process innovations will be assumed to a large extent by older employees. A greater capacity for innovation and adaptability is increasingly expected of them, and they must be prepared. Life-long theoretical and practical learning and retraining will apparently be part of every curriculum vitae in future.
5. The segmentation of the labour market will continue unabated. We will therefore have to deal - differently at regional and sectoral levels - with relatively higher unemployment and concurrently a shortage of qualified personnel. In view of the rationalization measures and government cutbacks, a rise in jobs as was projected up until recently in Germany will no longer be likely in future. Unemployment will continue to persist and even worsen in certain areas. At the same time, the shortage of qualified personnel will become keener if the number of young people who opt for vocational training in the dual system continues to drop. A clear trend is emerging, not only in Germany but also in many other European countries for superior and in the final analysis academic courses of education <sup>2</sup>, because they offer higher status, and more opportunities for a



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better career, more pay and better quality of life. If this 'meritocratic' orientation continues - as it can be expected to do as long as higher education continues to be crowned with an aura of privileges - the shortage of qualified personnel, skilled workers and commercial and administrative senior staff will become even more acute. Vocational training must therefore be made more attractive and the drop-out rate<sup>3</sup> must be reduced if this trend is to be checked.

6. The pressure of immigration will grow. It will affect the Member States and regions of the European Community in different ways, of course, but will nonetheless exert considerable strain on vocational training and employment systems. Events and decisions in Central and Eastern European countries are highly significant in this connection. The transformation of their planned economies and education systems into democratic and market conditions is creating enormous problems for these countries, and Western Europe and the USA should and must help to solve them<sup>4</sup>.

Far from being isolated, these different challenges are closely interlinked. So they cannot be tackled by pinpoint solutions and simple answers. We need 'systemic', holistic approaches which take account of the real complexity of modern industrial societies, their dynamics and interdependence, which also means that: We need education and training systems structured and operated so as to deal with complexity and change. Is the dual system up to this? Does it have the necessary reaction and development potential? Or is there an inherent weakness in the duality principle itself and in the stringent systematic character of our vocational training which has now waned in the face of the new challenges? I shall broach this question from the following angles:

- cooperation and consensus in the dual system;
- complexity of vocational training and useful differentiation potential;
- adaptability and capacity for innovation of the dual system; and
- integration and equal value of vocational training in the overall education system.

## **2. Problem and future-oriented analysis of the dual system**

### **2.1. Cooperation and consensus inside the system.**

A key characteristic of our vocational training is the requirement for cooperation and for reaching a consensus. This does not eliminate 'combative' elements in the political row about vocational training. Conflicts of interest and legitimation are drawn out here as

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well, without however calling the system into question, because it offers the participating groups - in particular employers and the trade unions - an important opportunity to exercise influence which they do not enjoy so readily and directly in other areas of education and training. No side is prepared to renounce this political power. Indeed, it is an important factor of stabilization for the dual system.

In my view, the need for cooperation and for the social dialogue in vocational training will become all the more pressing in future in all highly complex, pluralistic societies. The financial burden cannot be borne only by one side, nor can the multifarious qualification tasks be provided only by one side; similarly, problems cannot be solved from only one perspective. In many areas of political and economic life, cutting oneself off from others and association no longer take priority. The combination of skills and aptitude, the creation and utilization of synergies are becoming increasingly important, though not at the expense of competition nor general harmonization of interests.

The cooperative approach to problem solving which characterizes the German dual system is in line with these future goals. Cooperation and coordination in the dual system are enshrined in legislation (vocational training law of 1969) and take place at different levels in accordance with the prevailing tasks and requirements. I should now like to explain this network of cooperation and to present the different 'dualities' or partnerships.

More specifically, in initial vocational training we have cooperation between:

1. Government and industry at the general social and political level. The essential element here is that the state (in this case the federal government) has transferred decision-making powers to industry. As a result, industry not only co-finances training and further training to a high degree, it also exercises great influence on how training is organized and run. Initial training can be defined as a common task by government and industry.
2. The social partners (employers and employees) at the level of political interests: employers' associations and trade unions join forces to structure vocational fields and to draw up job descriptions<sup>5</sup>. They determine the content, objectives and length of time for vocational qualifications and establish examination requirements. That means: They elaborate the 'vocational regulations' which govern in-company training. Such training regulations are recognized and enforced by the state (federal government, competent federal ministers) only once the social partners have reached an agreement.

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3. The federal government and the states (Länder) at state level <sup>6</sup>. On the basis of a separation of powers and responsibilities between the federal government and the states as stipulated in the constitution, the prevailing regulations for in-company training on the one hand and the framework curricula for vocational schools on the other are initially formulated separately - in accordance with the objectives set out at the outset for the new job to be regulated. The content and time requirements of both plans are then brought into line in accordance with an agreed procedure ('Common Solution Protocol' of 30 May 1972).
4. Self-governed bodies of the economy, ie chambers of commerce, companies and school boards at regional administrative level. This concerns the implementation of training and tests, which are approved jointly by representatives of schools and chambers of commerce and companies.
5. Chief instructors and the works councils at company level for the implementation of training regulations in companies (as per § 98 of the Labour Management Act). As the vocational regulations are the result of a compromise, there is room for interpretation in practical terms, which is carried out jointly 'on the spot'.
6. Schools and industry at the level of the training venue. Instructors and trainers try to coordinate their instruction and training measures, align their concepts of qualification and connect practical work experience with generalized considerations and findings.
7. Finally, between all political authorities, ie between the federal government, the states (Länder) and the social partners (both sides of industry) in the discussion of fundamental questions concerning vocational training policy, in the consultation with the federal government and the decision on vocational training research projects as well as the evaluation of their results. This dialogue is conducted equitably by groups in the central committee of the BIBB, where policy makers engage in direct exchanges of views and experiences, making the BIBB the 'common address' for all those involved in vocational training.

This multifaceted, far-reaching institutionalized cooperation does not always run smoothly. As can be expected, conflicts and difficulties do arise, and there is always some room for improvement. In principle, however, there is a decisive, expandable advantage in these partnerships and their joint responsibility.

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The dual vocational training reflects the plurality of interests in society and the social interdependence of the world of work. It involves the relevant actors and tries to meet the qualification needs of the employment system as well as the needs of individual development; it reflects the interests of the employers and meets the objectives of the trade unions. It relies on a balanced problem-solving process to offer every side a useful approach to their interests. Frequent criticism of the system as unfair (by one of the parties) and calls for greater balance are to be expected, as they constitute part of every political and social negotiating process.

## 2.2. Complexity and differentiation potential.

'Duality' therefore does not mean simplicity and lack of complexity as may sometimes be too readily supposed. On the contrary, it raises complex processes both as regards political organization and management as well as the practical implementation of vocational training. In concrete terms, this is reflected in the diversity of vocational training. The original simple 'division' - with (theoretical) instruction on the one hand and practical training on the other - ceased to exist long ago. The methodologies offered by training establishments and how they interact have become more complex.

Trainees are consequently confronted with a broad spectrum of learning environments in school, in companies and often also in supra-company training establishments<sup>7</sup>. They learn in classrooms, laboratories, the workshop or in corporate training centres; they learn in different jobs in one or more companies/institutions ('training associations'), on the job and in simulated or 'model' training plants and companies. There they meet people in varying numbers and with different jobs and positions and they themselves take different roles. In all, the young people and adults who attend these programmes are exposed to multiple social and organizational experiences. They get to know the complexities of the modern world of work better and more directly in a dual vocational training scheme than in a school-run system<sup>8</sup>. The transition from training into the employment system is accordingly all the smoother for the individual.

What of the contents and timetables of the courses? Where is the diversity here? Hasn't our far-reaching standardization and systematization led to a 'uniform concept' which is probably not suited to the broad spectrum of abilities and interests of young people, nor to the multifaceted, rapidly changing qualification requirements? Should we abandon our 'monolithic' concept or at least break it up here or there?

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It should be borne in mind that there are no limiting school admission requirements for the dual vocational training in Germany. Everyone can enrol, whether they have attended the upper division of elementary school, lower secondary school, or higher secondary school. Vocational training is given in accordance with standardized procedures over three to three and a half years<sup>9</sup>. The minimum requirements for a job in theory apply to all trainees in the same way. Such uniformity presupposes equal treatment of different social training groups and diploma holders as well as impartial consideration in the transition to the employment system (ie the same pay scale). More importance has been attached to equal opportunity for vocational training in Germany than to means for differentiating between vocational training courses for specific target groups through graduated training periods, different levels of requirements and performance as well as training goals, as is the case in many other countries. Graduation from vocational training as skilled workers, journeymen and qualified specialists is the same for all courses in the dual system, even if the requirement profiles for the trades may differ from each other.

Therefore, we still have great potential for differentiation conditioned by the system itself in Germany, which can be deployed in different ways as external and or internal differentiation. This state of affairs is currently being debated, because a promising attempt at differentiation and individualization is seen as essentially entailing a better utilization of human resources, greater appeal of the dual training system, and a way of meeting better the new challenges of the world of work. However, experts and political actors have not reached agreement on a differentiation concept because it is accompanied by far-reaching social consequences.

If for example an external differentiation is attained, where a special offer of shortened and simplified courses (where theory is done away with) is made available to the less able and inefficient trainees, while more demanding, higher qualified courses are offered to gifted and efficient trainees, this would mean a break with the hitherto well-balanced socially oriented vocational training. If, on the other hand, we were to opt for an internal differentiation, which successfully promotes the less able and inefficient trainees in the same vocational contents and objectives through methodological and instruction measures while opening up additional qualification opportunities that the gifted can choose freely, but which do not automatically lead to different certificates, then the existing social agreements can be left intact.

Another attempt at differentiation lies in the regionalization of vocational training, ie in its more specific application to the regional structure of the economy and to the local manpower needs.

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The minimum requirements for vocational training apply nationwide in Germany, ie in all federal states, including the new Länder (former GDR). In-company training is geared to these standards<sup>10</sup> whether the company is situated in Bavaria or Hamburg, Saxony or Baden-Württemberg. Only in the theoretical part is there a variation from one federal state to another. However, this in no way reaches the proportions of regionalization practised in other Western European countries or being considered in parts of Eastern Europe at this time. Here again, we have considerable options for a formally regulated segmentation of training courses.

Before deciding on more differentiation, however, the consequences of such a move should be assessed. A standardized, uniform vocational training fosters mobility and freedom to move within a state ('Länder'); it facilitates the alignment with the overall employment system and gives individuals more security for the recognition of their attained qualifications in practice. In view of European integration and the creation of a corresponding training space and labour market, a further differentiation in national vocational training systems could prove rather counter-productive. It would in fact make the intended mobility in the internal market more difficult. So in view of the new conditions, the pros and cons of a more intense utilization of the differentiation potential in the dual system should be given serious consideration: transparency, manageability and international comparability would be reduced by an (external) differentiation geared specifically to groups and regions. The appeal of vocational training for individual companies and for young people and their individual interests as well as the development of human resources as a whole could be improved in this way. A joint decision on this point by the partners in the dual system is pending.

### **2.3. Adaptability and capacity for innovation.**

The lasting quality and effectiveness of a system depend on its adaptability. How flexible and innovative is the dual system? Can it bring about the adjustments expected of it at this time? This question is posed on two levels:

- quantitatively, with regard to the availability of training positions to satisfy both the needs of the employment system and the demand of young people/adults; and
- qualitatively, relative to changing attitudes and requirements from the corporate and individual perspectives as a result of structural changes, technological and organizational innovations, as well as changing social values and personal lifestyles.

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The dual system has proven its capability to master quantitative problems especially during the 1980's when the excessive demand for training positions could be satisfied thanks to a joint effort by the government and industry. Appeals and financial incentives made training positions available for the current needs of the employment system and thus curbed the menacing youth unemployment with its serious personal and social consequences. No one denies that the consequences of this strategy have not all been positive. The after-effects of the former motto 'any training is better than none' have not been completely cleared away. Nevertheless, the dual system has stood this acid test.

A critical situation has now arisen as a result of German reunification, because the economy in the new federal states is not in a position to provide the necessary training positions. This problem has up until now been cushioned through financial support by companies prepared to provide training, the creation of supra-company training establishments and the provision of training positions outside industry <sup>11</sup>. However, the implementation of dual courses of training without the participation of industry means that the duality principle collapses in practice, even if only during a transition period and to a limited extent. Thus, politicians and the social partners want to move beyond this provisional solution as promptly as possible. This case development has demonstrated two things about the dual system;

- the limits of dual training in regions with weak economic structures, where companies are fighting for their very survival; and
- the considerable flexibility of the decision makers, who have to a certain extent 'made the leopard change its spots' with regard to the implementation of the dual system in the new federal states and adequate availability of training positions.

As to the qualitative aspects, the dual system has once again shown flexibility and adaptability, albeit not always with the speed and results desired by many experts. A degree of clumsiness and the limited amount of innovation are due to the complex dual decision-making processes and structures.

On the other hand, the change and effort to get the qualification supply and demand to concur are in principle up to the dual system. Because industry finds itself playing a double role, ie requiring new qualifications and at the same time being a responsible instructor, it is in its interests to update and continually adjust the contents and objectives of vocational training courses. Every committed

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company, even if the corresponding training regulations do not yet so specify, must take the initiative to impart the new skills and knowledge in its training and further training programmes, in order to implement its organizational and economic objectives.

The pressure to standardize and the participation of the trade unions provide the necessary correctives, so that changes of the contents do not exclusively follow the needs of individual companies, but are of greater general significance and applicability in the employment market and take into account the interests of employees and trainees.

Naturally, this dynamic dimension and the adaptability of the system do not guarantee that important innovations can always be agreed on at the right time. However, as can be said with regard to the relevant major problems of vocational training in schools, they do improve the opportunities to balance the labour market's demand for qualifications and the provision of those qualifications by the vocational training system. Cooperative models have a decided advantage here.

The dual system's capacity for innovation has in recent years been documented in many training regulations, eg through the restructuring of jobs in metalworking and through the involvement of trans-specialization 'key qualifications' which further individual personal development <sup>12</sup>.

These innovative steps cannot possibly satisfy all requirements. Nevertheless, as noted above, oriented as they are towards reaching a consensus, the decision-making processes of the social partners exclude the attainment of one-sided objectives. As long as the interest groups do not see the complete fulfilment of their (ever changing) proposals in the respective agreed changes, this discrepancy will act as a motor for renewed attempts for change. And as long as employers and trade unions see vocational training as an important field for the presentation and pursuit of their own interests, their commitment to it will remain assured.

The current drop in the demand of young people for dual vocational training presents us with a hitherto unencountered problem. The new attitude of young people to training cannot be 'corrected' with the tried and tested instruments of improving the quality of the contents and methods. Other persuasive incentives must be offered to them. Such incentives are to be found in better career opportunities, better pay and improved lifestyles, which go hand in hand with qualifications acquired through vocational training. As long as these personal opportunities continue to lag



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behind those offered by higher academic education, there will be no real reason for efficient, motivated young people to opt for a dual vocational training scheme. Awareness of this reality is increasing by the day.

In view of the drop in demand, innovations are now needed which go beyond conventional thinking about the limits of the system. Young people must be offered vocational further training and career advancement prospects, which they can accept as real alternatives to careers available through higher education courses. Employers and trade unions have the organizational capacity in both the employment and the vocational training systems. They can send out clear signals through the company recruiting and personal development policy and at the same time work towards the establishment of such vocational training for career advancement.

#### **2.4. Integration of vocational training in the overall education system and the expansion of dual further training.**

Vocational training is acquiring a unique position in Germany; despite its proud tradition, it is not fully integrated in the education system. Young people without 'Abitur' have ended up in an educational impasse, if they have finished only a dual vocational training scheme. With this qualification (including additional further training), they have up until now not been eligible for academic courses of education.

The discussion on the equal value of vocational and general education has been going on in Germany for years. The social partners share the view that the transition to higher education institutions and universities should also be ensured or at least made easier for graduates of the dual system. Vocational training and work experience are still not seen as sufficient prerequisites for the ability to study.

Even if the equal value were to be recognized and admission to higher education settled, the problems of decreasing demand and of having sufficient qualified personnel would not be fully solved, because:

- only a minority of young people would succeed in the arduous course of an academic (further) education;
- it would not be limited to eligibility for admission; courses of studies would have to be offered which are directly related to the vocational training, skills and experience - which is not often the case in Germany, and

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- these young people aspire beyond the levels of qualified personnel, and thus do not contribute to offsetting the deficit of skilled workers.

Consequently, something more should be done. In this connection, proposals and models which connect a dual further training with defined, vocational careers accepted by all sectors seem very promising. Such further training for career advancement takes place in the interplay between work experience and training, and can be organized along parallel, alternating or integrative lines. In this connection, consideration should be given to, for example, an independent dual vocational 'Abitur,' to the corresponding creation of recognized vocational institutions, such as vocational academies, as well as to modular courses of training on successive courses to acquire further skills for career advancement. In this way, interested graduates of vocational training programmes can have a clear picture of the various steps and qualifications/certificates, and make further career plans together with the company and prepare themselves accordingly.

This calls for transparency of the relevant offer of further training courses and a clear level of quality and requirements. Qualifications and partial diplomas which can be acquired must be established and agreed on an industry-wide basis. Applicants must know which further training courses (modules) they must complete successfully, in order to achieve their goal and to satisfy the necessary requirements. If vocational careers and further training are to be systematically correlated, adequate standardization and quality assurance are vital. These matters simply cannot be left up to a completely free, unregulated further training market.

Such an attempt at renewal could make dual further training more attractive. However, it requires a reorientation and awareness of innovative organizational tasks on the part of political authorities - tasks which go beyond the current limits of the dual system.

### **3. Main efforts for the future development of dual vocational training**

To summarize:

1. The dual system of vocational training has up until now proven its effectiveness, certain shortcomings notwithstanding, and is now confronted with new tasks, which require changes inside and beyond the system.
2. The dual structure, together with the obligation to cooperate and to agree on solutions to problems, has a number of advantages,

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which are important for meeting current and future challenges. The important thing is for political actors to accept the need for the further development of vocational training, to take joint initiatives and to exert their influence in a constructive manner.

Changes to the dual vocational training system should strive for:

- an internal differentiation of courses of education, in order to promote less able and efficient trainees alike with appropriate methodological, didactic and qualifying concepts to a greater extent than has hitherto been the case;
- the implementation of the equal value of vocational training and general education, so as to provide to graduates of the dual vocational training system access to higher, academic courses of education, and to reduce differences in status between vocational training and general education even further;
- an enhancement of further training and a consistent connection of initial training and further training so as to create training schemes based on each other which would enable individuals to continue adapting their skills to the needs of the market;
- the creation of a jointly organized further training scheme, systematically linked with defined vocational careers and recognized diplomas, which would offer graduates of vocational training attractive work and career advancement prospects, which can be chosen as convincing alternatives to realize their own career and life plans.

The German dual system is the result of a long historical and socio-cultural process. It cannot be changed at will, nor easily transferred to other countries. It does however, contain elements, which can be modified in accordance with the social and cultural conditions and circumstances of other countries and then introduced into local vocational training systems. These include cooperative forms of the organization, management and implementation of vocational training. On the whole, the German partnership effort has been successful up until now. ┘

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## Notes

- 1 Dual training is not provided for all jobs; training schemes for qualified personnel given entirely in schools do exist, but are considerably less numerous.
- 2 For the first time, there were more students (about 1.7 million) than participants/trainees in the dual system (1.5 million) in Germany in 1991. Even if a simple comparison of these two figures is not appropriate, it nevertheless does point to a turning point which is stirring great alarm in our country. Furthermore, a high number of training positions (especially in skilled manual labour) remain vacant.
- 3 To be sure, compared with other countries, we have a relatively low drop-out rate (8% to 10%). Given the shortage of qualified personnel, however, this rate is too high. This potential should be utilized.
- 4 The transition process in the new federal states of Germany (former GDR) is only partially comparable. The structural and qualitative attendant conditions and circumstances are considerably different from those prevailing in Central and Eastern European countries, so there can only be a limited transfer of experiences gained in Germany.
- 5 The 375 training jobs recognized at present (their number has been constantly reduced in recent years) are classified under 13 fields, which cover important (though not all) sectors and areas of employment. For example, training for positions in health care and social work has up to now been provided primarily in schools and not in the dual system.
- 6 The federal government is responsible for in-company training, which is accordingly regulated nation-wide; the states are responsible for the theoretical part of vocational training (which also includes general education) pursuant to their independence in educational and cultural matters.
- 7 Supra-company training establishments have been set up in SMEs recently (about 600 in the former FRG) to provide support for training activities; these establishments offer training in areas in which companies provide limited, if any, similar training. These supra-company training establishments thus constitute the 'third leg' of the training system. The running costs are usually incurred by the companies themselves; construction and equipment (modernization) are paid for by the federal government.
- 8 Occasional practical training schemes of limited duration given increasingly in school-run systems are not of the same quality as the consequent involvement of trainees in the actual business experience. The two forms cannot be treated in the same way therefore.
- 9 Training periods are usually shortened for 'Abitur' (secondary education degree) holders (to 2-2½ years).
- 10 This does not mean that training is given in exactly the same way everywhere. As is well known, the procedures and quality of vocational training vary in practice, with a more noticeable trend for such variance between companies than between vocational schools.
- 11 Outside industry means 'purely through school'.
- 12 Such trans-specialization 'key qualifications' include independent planning, implementation and inspection or evaluation of one's own work, a capacity for cooperation or correlative thinking.

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## US youth apprenticeship programme

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There have been several recent developments in US programmes for youth and for the school-to-work transition, particularly, in what is called 'youth apprenticeship - American style', which, in a sense, is a fledgling US version of the dual system of education.

I am going to focus, in particular, on some of the design challenges and priorities facing the USA, in the hope that the comparisons between what we are doing in the USA and comparable initiatives in Europe will be enlightening for all of our work.

By way of a short digression, I should mention that my own organization, Jobs for the Future, has been involved in these issues. Jobs for the Future is a not-for-profit organization; we are not government, we are not business, we are an intermediary, meaning we go between the different sectors of government and business. Our efforts are largely financed by large foundations. It is interesting, if you look at the social contexts and the kinds of institutions for innovations that our different cultures have, that an organization like ours would be playing a kind of seeding role in partnership with other mainstream institutions.

The USA is one of the few industrialized countries that lacks a formal system for helping young people make the transition from school to work, especially for those young people in the USA that do not go directly from school to college, which is a large number of young people. About half of all young Americans do not go on to college, and half of those who do, leave without ever completing a four-year degree. They are called the neglected majority; the forgotten half. It is a very very large number of young people.

There is a recent study by the US General Accounting Office that points out some of the differences between the US system and those of competing nations, like the Europeans. In general, Europeans expect all their students to do well, to perform well, up to a common academic standard. In the USA, on the other hand, there is an expectation from the beginning that many students will lag behind.

Most European systems have competency-based national standards that are used to certify skill competency. The USA tends to certify programme completion; ie that young people finish an amount of time in school rather than that they emerge being able to know and perform a set of skills. Europeans tend to invest very heavily in training work-bound youth. The USA invests about half as much for each young person who goes directly into the workforce, as it does for the young people who go to college. Finally, Europe

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has a much more extensive way of involving employers in this school-to work-transition.

However, there has already been growing interest in the USA in some of the European systems. There has also been growing interest in changing and improving the US vocational education system. The Tech Prep programmes are one example of that. There is also a major movement to try to integrate the academic and vocational education in our country, so that, rather than have academic courses and vocational courses, the two are taught together in a much more active project- oriented approach to learning.

I think the reason why this interest has arisen now in the USA is partly economic; we look at the economic standing of our country and we see that one of the reasons why Germany and other countries have been able to adapt and adopt new technologies so quickly, is that in many instances their frontline workers, their technical workers, are able to do things that in the USA only engineers and management do. That very much shortens the time lag for certain European countries to be able to solve new problems and implement new solutions.

Some of the interest in youth apprenticeship in the USA is also educationally based. We have had a decade of very, very intensive education reform efforts, that have by and large failed to reduce our drop-out rates; failed to increase test scores and in many ways have been a series of laws, mandated down on top of the school system, that have really left untouched how young people are motivated and how they learn. If you are not going to college in the USA, there really is no reason to work hard enough to master a subject and get an 'A'; you can get a 'C' - no-one will ever ask you anyway and you are going on to work. So you have no motivation; you see no connection between what you do in school and what you do in work.

Similarly, the USA has had an educational approach that assumes that one style fits all; that most people can learn best in a lecture format when there is now an enormous body of cognitive research that says that probably very few of us, maybe as little as 5% of the population, learn best in this way. The same research shows that for most people, whether they are college-bound or not, an approach to learning that allows learning by doing, that involves students in meaningful activities, would be better to master not only vocational preparation, but the broader kinds of academic and democratic citizenship skills that we hope to build in our young people.

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Finally, there is a concern in the USA, on a human level, not just economic, not just educational, at the waste of generations of young people, who are left to flounder through the labour market in their twenties, under the guise of equal opportunity, until they get serious in their late twenties and join community college or traditional apprenticeship programmes or move to a better job, finally having got job experience. Developments like the riots in Los Angeles have heightened people's concern about the necessity to link young people to viable, long-term economic opportunities.

US interest in youth apprenticeship has to be seen in this broader context, as one, among many, reform efforts going on now in vocational education. That said, the youth apprenticeship model most commonly discussed in the USA has some unique design features, given our own context and our own culture. It is a structured programme of school and work that has a much more closely integrated kind of instruction between the schoolplace and the workplace than traditional workstudy or co-operative education have had in the past, where the school and the work experience can co-exist as parallel tracks. The youth apprenticeship programmes require a lot more reflection on how the two integrate. In some of the more sophisticated programmes, students do not learn the maths they need to read a blueprint or a financial statement until they encounter the need for it in their job. That requires a different kind of coordination between teachers and workplace supervisors.

Young people move through a progressive mastery of a subject towards a completion certificate or a credential and in that way youth apprenticeship is quite unabashedly modelled on the German dual system. What is different is that the models that we at Jobs of the Future most advocate start with a young person in the 11th or 12th grade, include the last two years of high school, and continue on to some post-secondary education. In the USA, post-secondary education matters. It is the perceived route to status and it is the actual route to higher earning power. We are very concerned that we do not track young people and foreclose lifelong options and we feel that in our culture having a post-secondary connection is a critical design component. In fact, a group of 12 states has agreed upon a set of common design principles, that include at least one year of post-secondary education providing a credential that has currency in our culture. That credential would be some kind of a degree, a post-secondary degree, that could be transferable to higher levels of education later in the young person's life should they decide to do that.

In some ways, some aspects of youth apprenticeship are a little bit like the Tech Prep scheme. Where it is different, is that instead

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of emphasizing work experience or work exposure, as Tech Prep and other forms of vocational education do, it emphasizes the concept of mastery; that there is a body of skill that it matters that a young person masters. Not just that young people get some experience working, but that they actually get a qualification that would have currency in the labour market.

Briefly, at the federal level there is an enormous amount of interest. President Bush has submitted a piece of legislation before Congress that would set up at the national level enabling laws and regulations that would allow states to put in place youth apprenticeship systems and would recognize the credentials that they put forward, would deal with issues like child labour laws and how to rationalize them with youth learners. There are about seven other bills currently before the US Congress, that treat youth apprenticeship in some way.

At the state level there are at least 17 states that are very, very active in their youth apprenticeship activity; 12 of which have joined a consortium to take on some common design elements, figuring it would be cheaper if a couple of states are going to have apprenticeships in metalworking, to have three, say, develop curricula for that; another three to develop curricula for health occupations: thus they could defray, in a sense, the R&D costs, by collaboration. At least four states have passed state level legislation enabling youth apprenticeship systems, and they have done that in very different ways.

There are some regional collaborations. The Great Lake States, which comprise the most heavily industrialized part of the country, are starting to collaborate in a regional certificate and standard setting process, starting with the metalworking industry. There is also a lot of activity at the site level. Individual school districts and communities have decided to move towards this kind of model. Despite all of these efforts and the enormous amount of coverage that this issue has received in the last 18 months, today there are probably only about 1000 young people anywhere in the USA enrolled in a programme that could be called youth apprenticeship. That compares to about 600,000 people who would be in a more traditional cooperative education programme.

So one of the design challenges that we face, as a country with limited resources and with very limited financial resources, is how much do we start to build anew, afresh, and how much do we need to work with what exists, in the form of Tech Prep and cooperative education, to move those systems in the direction of more attention to mastery, certification, qualifications.



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From the very early programme experience, youth apprenticeships demonstrations have had an enormous impact, particularly on young people. In place after place, young people who were dropping out, who were not attending school, who were getting poor grades and test scores are back. They are attending school, they are doing well in their classes. One of the programmes in Williamsport in Pennsylvania just gave the 14 students in the youth apprenticeship programme the examination that is usually given to adults when they are trying to do the theoretical part of a metalworking apprenticeship, and the young people passed with very high scores. They gave the same exam to young people in the traditional academic programme and the highest score that any of those young people got was four out of fifteen possible points. That was the lowest score that any of the young apprentices got. The new programmes are increasing students' self-esteem and all of the things you would expect would happen are happening but on a very small scale.

Let me turn to what I see as some of the design challenges that we face. The USA is a stubbornly individualistic country; we resist centrally-imposed solutions, and I think one of the most urgent challenges we face is to try to help these innovative programmes that are starting up around the country coalesce into a system in which any young person could have access to a youth apprenticeship programme if he or she wanted it. Young people could move across state boundaries or from company to company and have their credentials mean something.

The second challenge we face (in common with Europe) is the issue of status. The USA is not a country that has held technical preparation or technical jobs in high esteem. We are finding in the preliminary programmes that so many of our young people today have only available to them jobs in the secondary labour market - MacDonalds and the retail sector. Thus, to have a job at Honda or at IBM, or at one of the major teaching hospitals in a city, gives young people status; so these youth apprenticeship programmes, which let young people earn while they learn, and connect them to post-secondary education, are being perceived as high status options.

Another major barrier and design concern that we have is employer involvement and the fact that we lack the employer infrastructure of trade associations and chambers of commerce to play the role that they do in many European countries. This I think is our single most important problem. US employers do not see it as their responsibility to help train young people for jobs. Increasingly our largest employers do not hire high school graduates at all; they only hire people with post-secondary credentials. They do not really

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use recruitment as a way of forming skills. They do not see it as something directly related to their competitive position. This is an enormous challenge that we face.

Similarly, we have very weak labour unions. So one of the major social partners that provides the check and balance in the European system, is, if not absent, certainly not in the same role.

The issue of qualifications and certifications poses a major challenge. One of the tensions that we have is that if we are able to get industries to set industry standards, is that too bureaucratic and slow a process? How do you update these standards quickly, when the skill requirements are changing rapidly? Is the amount of time that it would take to develop these standards and get them accepted worth it? Or is there some other technology or tactic that we could use that could achieve a similar result?

I think we agree that we need some kind of qualification and some kind of certification of learning, or else these programmes provide nothing different from a traditional vocational programme. We are concerned about high-quality learning and teacher development; about how to coordinate the state and the federal role; about guidance and counselling for young people. All of these have to be developed to a much further extent than they are now, if this system is to work and take hold for large numbers of young people.

There are two ways of seeing these weaknesses. On the one hand, they are what we have to work with; they are the design constraints that we have as we start to put this system together. In the beginning we have to work with what we have got. At the same time I think we have to think about the long term - 10, 15 or 20 years - about the kinds of changes that we want to be stimulating in employer behaviour, in credentials and certification, and that will not happen overnight.

As mentioned above, the early experience gives much reason for hope. Young people are seeing these vocational education initiatives as a high status option. In most of the programmes around the country, the number of young people petitioning to enroll next year is double or triple last year's. Some of the sites are handling the issue of status by actually locating the academic portion of the students' learning in a community college or a four-year institution, so that from the beginning the young people are part of the high status, post-secondary environment.

Those employers who have been involved have put in enormous amounts of time and energy and have found it to be a very

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rewarding process. They are inventing 'employer intermediary' organizations that can take out insurance and handle some of the wage issues for the young people. There is a tremendous amount of ingenuity in the kind of teaching that's going on in these programmes. There is a lot of attention to project-based learning, to very active and innovative approaches to mastery of the subject, where young people are doing projects that require them to think about history and English and literature and their technical subject all in one. So I think that we will find ways to solve many of the kinds of design issues, at least at the programme level. There is a question over whether we will be able to get to the system level, but we know that if we keep doing what we are doing as a country, we are going to keep getting what we're getting. And what we are getting is not good enough.

In closing, I would like to come back to some of the central concerns that we have in the USA, that Europe must share. The first is the issue of promoting lifelong mobility for young people. How flexible are Europe's systems really in doing that? How possible is it really for a young person to move into other occupations, or into higher forms of post-secondary education? And what is Europe doing about this issue that the USA could perhaps learn from or contribute to, given our different, and much more accessible, system of post-secondary education?

A second issue that concerns us a lot, and I know is a concern in some European countries, is the quality of the work-based learning, the degree to which the companies are providing young people with very diverse learning opportunities, that develop broad kinds of problem-solving skills in them. I know that, for example, Denmark has, in its high-tech companies, gone through a mini-revolution in structuring apprenticeship learning. Their feeling is that if they force the students to go through a process of mastering theory and doing the small cars before they do the real part they will never catch up and they now have changed how they bring their apprentices into the company. They divide them into teams and they say to the teams: 'your job is to build a robot hand in three months. We'll teach you a lot about group dynamics; we'll teach you a lot about how you learn'. They put the young people through an intensive training session in these areas. Then their supervisor says to them: 'I need a blueprint by the end of the day', and leaves the room. The kids turn to each other and say: 'What's a blueprint?' and go back out to the supervisor to say that they don't know what a blueprint is. The supervisor says, 'here are the people in the company who do; here are the books you need to read; I still need a blueprint by the end of the day'.

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So we are very interested in these kinds of radically different approaches to organizing learning. Our suspicion is that perhaps some of the ways in which workplace and schoolplace learning is organized in the traditional European systems may not get young people the kind of thinking and problem-solving skills that we think Americans need to have.

So these issues of mobility or tracking, of the quality of the learning in the workplace, and in general of the overall flexibility of the system, in its ability to change rapidly, are the ones that concern us. We are concerned that we do not put in place a rigid or complex bureaucratic system that requires a long time to create and then a long time to change, once we have it.

As a final point, we are also faced with the issue of what to do about employers. Is it possible to involve employers in creating something like this, short of a national tax as most of you have? Is there some kind of incentive for them to become involved in adopting this form of behaviour. There would be no constituency in the USA whatsoever for passing such a tax through Congress, so what other design options, short of that, do you have? Or are we dreaming to think that employers would be willing to invest in this without those kinds of incentives? ┘

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## Vocational education in Portugal

*Roberto Carneiro*

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We are living in a multi-polar world, where we often speak of north-south and east-west relationships. I think it is high time that we started speaking of west-west relationships, bridging the ocean. This conference is an excellent step forward to foster a sustained dialogue in addressing common problems between the EC and the USA.

Actually, for us Portuguese, the sea has always been the linking element rather than the divider or the separator. It is our highway to encounter peoples, continents and cultures, an element which unites and links.

The Maastricht Treaty, the treaty on the European Union, very clearly sets out a mandate on education, for the whole of the Community and for each of its member states. Moreover, it also sets out the road to cooperation with third countries 'particularly in the field of vocational education'. So this is, in fact, one of the first 'post-Maastricht' endeavours.

One of Portugal's boldest experiments in the last few years is that of the vocational schools. My paper will not focus on a very detailed description of what our vocational schools are; instead, it will address more strategic or systemic issues, and some key policy challenges.

### **Competitive advantage of vocational education**

In recent years I have had the privilege of observing an amazing diversity of educational architectures in different countries, societies and peoples. However, behind that diversity and variety lies a vast commonality of questions, problems, issues and challenges facing modern educational systems. There are major shared perceptions cutting across borderlines, oceans, countries, cultures, and even traditional frontiers between public administration and corporate business.

Although they are normally slow and sometimes drag their feet, educational systems are certainly living entities, not dead bodies. Therefore, to remain alive, they must evolve. They must evolve at an ever quicker pace, respond to change and anticipate futures. They must constantly mutate, reshape and adapt and perhaps sometimes die, to give way to something else, something different.

This is a time of unpredictability, perhaps a time of crisis. But it is also a time of great opportunities: opportunities for change; opportunities to implement new models. Nations, as a whole, face formidable challenges. Sustained development becomes increasingly dependent on non-traditional production factors and on

policies designed to maximize the human potential. Let us take, for instance, Michael Porter, a celebrated corporate strategy author. In his *The Competitive Advantage of Nations* he deals with national agendas for a number of countries and it is striking that, for all the countries for which he puts forward clear-cut policy recommendations, somehow human resources and vocational education are constantly brought to the forefront. (Table 1).

*Table 1. National agendas and policy issues, taken from Michael E. Porter's The competitive advantage of nations.*

	Statement
<b>Italy</b>	Expertise is built in families and through diffusion of skills within localized Italian industries. The ability to upgrade existing industries will require a stronger and better-trained human resource foundation.
<b>Japan</b>	Efforts to develop and substantially upgrade the quality of vocational education should receive high priority.
<b>Switzerland</b>	Swiss success depends fundamentally on Switzerland having among the most skilled and specialized human resources in the world.
<b>Germany</b>	While many German firms have been able to acquire these skills abroad and apply them to their specialized fields, a major national investment will be required in both education and basic research in these areas.
<b>UK</b>	It must be emphasized that the UK will not regain innovation-driven status without a world-class educational and training system encompassing all socio-economic and ability levels. The agenda facing UK companies is also great. They must understand that without a broader pool of trained human resources their competitive advantage will be constrained.
<b>USA</b>	The USA cannot regain pre-eminence in innovation without human resources at least on a par with those in other advanced nations. There is a need for firms to play a greater role in the training and continual upgrading of their workforce.

### **Educational life-cycles**

Let us now try to understand the discernible life-cycles in the evolving process of educational systems. Since the second world war they have encompassed several stages, or generations, roughly represented in Table 2.

Table 2. The evolving process of educational systems.

Stages	Production-oriented	Consumption-oriented	Client-oriented	Innovation-oriented
<b>Driving Force</b>	<ul style="list-style-type: none"> <li>. Sustained economic expansion</li> <li>. Formation of human capital</li> </ul>	<ul style="list-style-type: none"> <li>. Social demand</li> <li>. Welfare state</li> <li>. Economic growth</li> </ul>	<ul style="list-style-type: none"> <li>. School accountability</li> <li>. Reducing public deficit</li> <li>. State-business partnership</li> </ul>	<ul style="list-style-type: none"> <li>. Institutional intelligence</li> <li>. Anticipatory change management</li> <li>. Global strategies in addressing learning opportunities and alliances</li> <li>. Transnational competition</li> </ul>
<b>Main Features</b>	<ul style="list-style-type: none"> <li>. Teaching factory</li> <li>. Assembly line</li> <li>. Economies of scale</li> <li>. Standardization</li> <li>. Central/uniform prescriptions</li> <li>. Bureaucratic power</li> <li>. Factor of production: teachers' force</li> </ul>	<ul style="list-style-type: none"> <li>. Democratization</li> <li>. Consumer's involvement (parents, students)</li> <li>. User charges</li> <li>. Heavy public investment</li> <li>. Media and mass technologies</li> <li>. Deconcentration</li> </ul>	<ul style="list-style-type: none"> <li>. Diseconomies of scale</li> <li>. Decentralization</li> <li>. Customization</li> <li>. Personal learning itineraries</li> <li>. Technologies of individualized learning</li> <li>. Social partnership</li> <li>. Student/family vouchers</li> <li>. Era of educational marketing</li> </ul>	<ul style="list-style-type: none"> <li>. Negotiation v prescription</li> <li>. Project work</li> <li>. Team/individual work</li> <li>. Grassroots networking</li> <li>. Permanent institutional redesign</li> <li>. Flat human management styles</li> <li>. Investment in processes and methods</li> <li>. Strategic spin-offs</li> <li>. Variable pedagogic geometries</li> <li>. Performance and output appraisal procedures</li> </ul>

These decades have been based on a 'production-oriented' educational system. The driving force was sustained quantitative economic growth and the pressing demand for homogeneous labour and qualified manpower. The motto was the formation of human capital, leading to novel economic theories advanced by G. Becker, T. Schultz and E.F. Denison in the 1960s. Some of its main features replicate the dominant paradigms of the production system as applied to the world of education. Educational planning emerges as a tool directed at fine-tuning the supply of school graduates to match the outstanding needs of the economy.

I designate the next stage, which some systems have moved onto with some success, as that of a 'consumption-oriented' cycle. The common feature of both production-oriented and consumption-oriented systems is mass education. The core driving force now shifts from overriding economic requirements to social demand. Affluence generates growing aspirations and more and more people turn to the educational system as the stimulus for main social mobility. The welfare state struggles to respond to social demand and to manpower requirements for economic growth in a desperate attempt to match school places, demography and ever larger educational intakes.

The main features of a consumer-oriented cycle are social

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democratization and consumer involvement, namely in the management of systems, fostering parental, student and local participation. Consequently, the change to a consumer-oriented system can represent a move away from a large, bulky, centralized system, to administrative deconcentration and cost-sharing through user charges.

The next stage is a 'client-oriented' system, which marks a fundamental first strategic shift. For the first time the link with mass production of education is broken. Now we are beginning to get individualized, customized, education, and to nurture a whole different attitude towards the intricate relations between school and community. School accountability and performance appraisal are now the consistent driving forces in societies heavily concerned with reducing public deficits and budgetary constraints.

Concurrently, for the first time, business is starting to say: 'Look, we are the clients, we have a say. We think your education system is bad. We believe we can help you produce a better system. We want an effective partnership'.

Size is no longer the best road to economies of scale. What is needed is decentralization rather than deconcentration. A strong case is made for customization, personal learning itineraries, technologies of individualized learning, social partnership, student/family vouchers. The competition for the provision of better education increases; because it has to sell and look appealing to clients, the school has to embark on marketing techniques, a pillar of modern corporate management.

Our current educational systems are a complex mix of the three above-mentioned stages. Only theoretically can one speak of pure breeds. Notwithstanding, let us look one generation further and try to prolong the life-cycles one step ahead. The future stage encompasses 'innovation-oriented' systems. This leap is a major challenge, representing a clear plunge into an educational system which is innovative and innovation-minded, rather than client, consumer, or production-oriented.

Now, we are typically speaking not of whole educational systems, as with the three former cycles, but of single institutions that are autonomous and intelligent, schools which are able to manage themselves almost as companies, capable of developing anticipatory management techniques and global strategies. These sweeping changes stem from the definitive elimination of preconceived school routines and suppose addressing learning opportunities in alliance with other communication sources as well



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as transnational competition. Some of the main features of this system are negotiation rather than prescription; project work; team and individual work; quality circles and grass-root networking, meaning that scale is not reached by top-down bureaucratic 'diktat'. Learning is subject to permanent institutional redesign - nothing is fixed. Management styles are flat rather than pyramidal. Investment, major investment, must be made in processes and methods, not only in objectives, and in the substance of the curriculum. The school becomes the centre of strategic social networking, in other words a powerful institutional production factor to enhance freedom and change. These institutions must be kept sufficiently small and whenever they grow and diversify, educational spin-offs must be allowed and even encouraged. Performance and output appraisal procedures must be perfected as a warrant to constant evolution. The identification of evolving patterns and standard life-cycles has to do with the core and the heart of what we in Portugal are trying to change in our educational system when addressing vocational schools and professional education. Seeking broad partnership and trying to move away from a production-oriented system characterized by a state-owned and dominated educational system, bureaucracy-run, top-down, and heavily prescribed on individual schools. This traditional model of bulky technical schools is now history, the new story begins with a different fabric of vocational schools.

### **Institutional context for school reform in Portugal**

Contemporary societies and modern nations at large share the formidable challenge of moving swiftly in adapting educational systems to new socio-economic needs and paradigms.

Large and bureaucratized public education institutions are well known to be resistant to quick change. This is the case with Portugal, a country which struggles with a long tradition of centralized administration and inefficient public services.

The new vocational schools emerged as a calculated rebellion against that pattern of education administration. Decentralization, diversity, autonomy, local devolution, fair partnership, community involvement, were the key words of a new educational lexicon.

Soon, the trend of vocational schools became naturally identified with one of the most significant movements in the reshaping of the school and of the institutional architecture underlying educational reform in Portugal.

They were the natural corollary of an intensive social dialogue undertaken long before the production of legislation. This proved to

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be the right methodology: allowing time and opportunity to break down the barriers of mutual suspicion, perhaps even resentment, between central government, local authorities and the business community; and furthermore, departing from the common perception of a structural weakness in the education and training system and working together through a network of innovative proposals based on the sharing of goals and responsibilities.

Schools have to be perceived as lasting and durable institutions. Thus, the decision to undertake the establishment of a different set of training institutions had to stem from a solid compromise between short- and long-term views. This became a matter of core negotiation and consultation: the very concept of human vocation, personal fulfilment and career training.

#### **Setting for the establishment of vocational schools**

The Portuguese economy developed satisfactorily during the second half of the 1980s, following a period of austerity during 1983-1984. This was due to the application of a severe adjustment programme, negotiated with the IMF, after which the economy began to recover only in 1985.

The growth of the gross domestic product has been above those of the main industrialized countries since Portugal joined the EC in 1986. If we compare Portugal's results with the OECD average, growth rates have been, respectively, 4.1% compared to 2.9% in 1986, 5.1% compared to 3.5% in 1987, 4.0% compared to 4.4% in 1988, 5.5% to 3.4% in 1989, and 4.2% to 2.8% in 1990.

Investments and exports were the most dynamic components of this growth. Investment grew at the rate of 10.9% in 1986, 15.1% in 1987, 15.2% in 1988, 6.0% in 1989 and 6.6% in 1990. Exports grew at the rate of 7.6% in 1986, 10.7% in 1987, 7.2% in 1988, 16.5% in 1989 and 12% in 1990 (growth rates in volume, as well as the GDP). However, it should be noted that the rise in export figures does not reflect any improvement in the balance of trade in goods and services with foreign countries, since the growth in domestic product created a very swift increase in imports of goods and services: 17.8% in 1986, 23.7% in 1987, 18.1% in 1988, 8.7% in 1989 and 12.4% in 1990. These rates are by and large much higher than the growth rate of the GDP, thus creating a considerable increase in the opening of the economy to foreign markets. It can also be seen that, with the exception of the year 1989, these rates are higher than the export growth rate, resulting in a marked deterioration in the balance of goods and services.

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The climate of confidence created by the political stability of the period beginning in 1987, without precedent since the revolution of 25 April 1974, contributed in recent years to the positive investment trends. A high internal saving rate of approximately 29.5% of GDP in 1988, 28.5% in 1989 and 28.7% in 1990 (gross total), also played an important part, along with the development of demand, in particular external demand, as shown by the high growth rates of exports in goods and services, and finally the unilateral transfers from the EC which financed public investment programmes and public support for private investment. These transfers accounted for about 1.6% to 1.7% of the GDP, in the years 1988-90.

A strong modernizing trend in management methods and productive demand was coupled with this strong investment push. The technological reconversion of more traditional sectors of the manufacturing industry, and the increased diversification of tertiary and subsequent services also played a notable part in this trend.

The Portuguese economy has come close to almost full employment: the present rate of unemployment scarcely exceeds 4% of the total working population. According to the Bank of Portugal's estimated figures, nominal salaries in the manufacturing industry would have grown about 16% in 1990, leading to a rise in real salaries of about 2.3% continuing a tendency that has been evident for some years, as real salaries rose 4.7% in 1987, 1.3% in 1988 and 0.4% in 1989.

In this way, the labour market has been under great pressure from demand dictated both by economic growth and the quantitative acceleration of employment (250,000 jobs were created between 1985 and 1990), and also by a strong positive demand for rare and much sought after qualifications.

The pattern of qualifications in the working population shows, however, strong limitations. Skilled labour and middle and high-ranking employees still represent a very restricted group within the working population. Levels of education are, in general, scarcely adequate to meet the new challenges of competition in the national and international economy. During the 1980s, strong social pressure was exercised on governments to restore technical and vocational education within the educational system. In fact, since 1974, with the hasty unification of the entire general educational system from the 1st to the 12th grade of schooling, Portugal had lost its capacity to 'produce' qualified technicians at the intermediate level, precisely those employees which the companies, managers and directors most needed.

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Turning now to the question of educational philosophy, the global dimension of the school has been recognized. This has led to the rejection of both early specialization and generalizations leading to blanket uniformity, and to a growing awareness of the need for a basic common education followed by diversification in secondary training. At the same time as social paradigms and representations were changing, owing to the democratizing explosion in school enrolments, the relationship between economic development and irreversible heterogeneity of labour as a production factor was beginning to be felt. This was more evident in the diversification of individual interests and training opportunities than from the traditional imposition of narrow functional profiles.

A review of the Portuguese educational policy in 1983 by the OECD, the UNESCO recommendations and the demands and resources of the EC itself also brought pressure to bear and so made it even more difficult to postpone the setting up of a vocational training system based on the 'specialization of broad and diffuse functions'.


So it was that 1983 saw the first generation push towards the redevelopment of technical training; in 1989 this was followed by the more sophisticated second generation process aimed at the conception and creation of the first vocational schools. The new technicians who have graduated in the meantime only started to enter the market place from 1986, in the first stage and from 1992 in the second.

Detailed analysis focusing on the evolution of enrolments in the two subsystems of training shows their complementary relationship, there being no conflict between their differing potentials to attract clients with specific requirements who, previously, were poorly served or not served at all.

### **Vocational schools: a new model for training**

The training systems which follow compulsory schooling tend to diversify as far as both training models and target students are concerned. On a parallel with the traditional secondary school system and technical education, various alternative routes were developed in the 1970s and 1980s, which had different durations, training contents, target-populations, socio-economic objectives and included other social partners.

Vocational schools emerged in Portugal in 1989. They were aimed at young people who had completed their basic general education and were intended to widen the possibilities open to people between 16 and 18. These schools combine the following main features:

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1. They are not state-owned schools, as they are formed through the local initiative of companies, local authorities, business and other associations, unions, cooperatives and foundations which freely and responsibly assume the role of promoters.
  2. They were set up to meet local and regional needs as defined by their local promoters, and are closely linked to social, economic and cultural activities of each catchment area.
  3. They offer programmes leading to professionally certified qualifications, at Level III, in general after three years (3,600 hours) or equivalent to the 12th grade of full secondary education. They also give access to studies in polytechnics and universities.
  4. They qualify a new generation of intermediate technicians and all courses have three training components: socio-cultural, scientific and technological; this last component normally accounts for about 50% of the total hours.

On the one hand, this is an example of an educational model which is essentially centred in the training context, while including various types of on the job training and work experience throughout the training period. In these aspects it is different from the dual system. On the other hand, it contemplates a model of private initiative, locally controlled but with a clear regulatory role fulfilled by the state which also provides technical and financial support. Here it can be distinguished from the completely autonomous independent systems.

In this way vocational schools represent initially a transition stage from the 'producer-oriented schools' model to the 'consumer-oriented schools' model. It remains to be seen whether they will be able to convert this model into that of the 'client-oriented school'. This is the trend that will definitively free the school system from uniformity, and will enable it to become a repository of diversity, and to meet the needs of the particular personality of each trainee.

### **Strengths of vocational schools**

We will attempt to sum up the principal reasons for the relative success of this new approach to educational policy by some key-questions.

1. Vocational schools have benefitted from the atmosphere of reform in the educational system, and from the expectation this has created. They were set up with the decisive support of local authorities (municipalities), companies and business

associations, unions, cultural groups, cooperatives and other political, social and economic groups of the local area; a significant number of local leaders were directly involved in setting up the schools, lending them prestige and social recognition; the vocational schools were in this way set up in the heart of an active and characteristic social partnership (Table 3).

*Table 3. Vocational schools promoters.*

<b>Promoters</b>	<b>Cumulative Total</b>	<b>%</b>	<b>Promoters 1989</b>	<b>%</b>	<b>Promoters 1990</b>	<b>%</b>	<b>Promoters 1991</b>	<b>%</b>
Municipal councils	51	21	14	15	18	21	19	31
Public bodies	24	10	6	6	10	12	8	13
Private companies	50	21	23	24	21	25	6	10
Association	69	28	33	35	19	22	17	28
Co associations	29	12	11	12	8	9	10	16
Unions and union assoc.	18	12	5	4	4	8	9	0
Others	7	3	4	4	2	2	1	2
<b>Total</b>	<b>242</b>	<b>100</b>	<b>95</b>	<b>100</b>	<b>86</b>	<b>100</b>	<b>61</b>	<b>100</b>

2. Vocational schools did not develop because other schools or modes of training were suppressed, or through exclusion of the past (for example technical education and apprenticeship schemes). Instead, they incorporate positive characteristics of previous systems and find their own field of innovation.
3. Vocational schools are formed by the establishment of a new social contract between the state and the civil society, with a view to providing citizens with a professional qualification. Young people between 16 and 19 are given priority. The schools are formally created with a detailed contract. The state has therefore abdicated its traditionally centralizing bureaucratic

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practice of preplanning and regulating everything, and moved to providing incentives and supporting the development of autonomous projects, opening space for creativity. Between the Maximum and the Minimum Intervention State we have opted for the position of a Regulatory State; catalysing hopes, expectations and initiative, via subsidiarity.

4. The launching of vocational schools was supported by a new administrative body with an innovative working style (the Technological, Artistic and Vocational Educational Bureau - GETAP), which is institutionally and geographically decentralized, having its headquarters in Oporto and not in Lisbon. Fostering synergy and mobilizing resources, this body has been simultaneously responsible for following-up the schools (each school has an attached adviser responsible for its follow-up). This involves technical support and evaluation; GETAP built a model replacing the Taylor pyramidal structure with a management model based on 'project networks'.
5. The small schools will always have a place in the vocational schools project. Schools started out with one, two and three classes in the first year, and in the second continued these three classes in the 1st and 2nd grades, although some opened one or two further courses, and in the third year continued with all of these classes. In other words, there is no provision for the state to authorize the schools' growth beyond more than 400 students in day courses. However, there are some which will grow by the internal division, spinning-off into new and more specialized units.
6. Vocational schools have gained political support - difficult with some ideological groups - from all political and social sectors, and all economic partners. Therefore, the main employers' associations and trade unions are themselves active school promoters.
7. Vocational schools have appeared at a time in which there was a latent social demand waiting to be tapped. In fact, they were called for both by the work market and the economy, and also by a growing demand for education beyond the compulsory stage; in addition there was a reaction against uniformity and rigid curricula, and the formal organization of the general education system.
8. Vocational schools offer several standards of achievement: equivalence, access to higher education, certification and

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community recognition. These have without doubt contributed to stimulating previously latent demand.

9. With regard to professional qualifications - traditionally technical, reproductive and specialized - vocational schools have developed from technological areas into other scientific, humanistic and social areas and so artistically-oriented vocational schools have been created. At the same time, service, industrial and other schools have also been set up. The concept of professional qualifications has been enriched, and the curriculum has gained in breadth, with areas of integrated studies which provide social and professional learning in the working context.
10. Vocational schools have had their own source of finance, with the support of the national budget and with a decisive contribution from the European Social Fund through a specific programme, PRODEP. This relative autonomy created a 'nest' for development which was not vulnerable to sudden changes in the technical and financial support. The local promoters themselves have invested considerable sums in infrastructure and equipment, reaching a calculated 2 million contos in 1991 alone, which is equivalent to 80% of the total sum invested by PRODEP in the same year.
11. Vocational schools have been opened throughout the country, covering all regions and the various areas of training.
12. As can be seen from Table 4, whether through promotion or finance, the major role was always performed by local initiatives, by local promoters. The complementary or residual role was performed by public administration, whether in the conception, design or implementation of these schools. Public administration did provide a strong component of technical assistance in project implementation and finance, as well as in the launching of training. The initiative and the prime responsibility rested with the promoters.

#### **Weaknesses of vocational schools**

Notwithstanding the positive aspects of the development of the vocational schools project, it is also important to note various critical points.

1. The normal development of vocational schools requires academic, social and professional recognition as it is essential that they should not be relegated to a minor position. Recognition of the diplomas of vocational schools is a critical



Table 4. Interplay between promoters and administration in vocational schools.

	Association of promoters	Needs assessment	Project design	Project negotiation	Project implementation	Launching training
	. companies . local authorities . employers . associations . unions . cooperatives	. local context . training priorities	. environment . needs . areas . resources . budget	. appraisal . approval	. management . marketing and advertising	
<b>Promotion</b>						
. Local promoters	*	*	*	Negotiation	*	*
. Administration	-	-	Technical assistance	Technical negotiation political decision	Technical assistance	Technical assistance
<b>Finance</b>						
. Local promoters	*	*	*	*	*	*
. Administration	-	-	-	-	*	*

\* = Degree of intervention

issue in the job market; it is perhaps realistic, despite the positive response and improved employability of graduates, to foresee problems in coordination between the qualifications of graduates and the immediate demands of employers.

2. The learning of self-reliance and responsibility, outside the narrow control of the state, can bring not only a certain lack of supervision and control but also lead to a trend to develop training projects dominated by the immediate interests of employers or by the outdated Taylor system of management.
3. The mobility and adaptability between subsystems of training is another critical point that deserves close attention from educational administrators.
4. It will be essential to avoid an excessively narrow curriculum, rigid and poorly adapted to promote learning. The curriculum must be capable of accommodating new subjects, of introducing innovative methodology; of being integrated into an education subsystem but remaining outside the logic of standard education. Vocational schools still risk being regarded as

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providers of training which is primarily aimed at those who are not successful in standard education.

5. The lack of security of tenure for teaching staff may have negative repercussions, as shown by the dissociation from the prevailing 'academic culture' and the 'cohesion of the school community'.
6. Continuing excessively high costs per student, related to the high initial investment in buildings and equipment which requires time to be paid off.

### **Present and future challenges**

The consolidation of the educational component of vocational schools and the attainment of institutional maturity will require that permanent attention be given to a number of problem areas, which are as follows:

1. The vocational schools should concern themselves with satisfying social demand, stressing particularly the individual credibility of the training projects and establishing greater local control to improve their quality; provision of adequate training for the new requirements of the economy and employment is a particularly sensitive area for the future; a greater level of personal satisfaction in the social integration of the new technicians is essential to maintain high social demand.
2. It will be essential to improve the quality of training; this will become feasible specifically through the training of trainers, the improvement of curriculum development, an increase in opportunities to alternate between the training centre and local activities, the definition of mechanisms and of transfer between training systems.
3. The vocational schools have a role to play in training civil servants to perform new social roles, reinforcing particularly the social contracts between the state and civil society in the field of training. The administration has the overall important role of showing the advantage of local support, the linking of concrete activities, the strong association of different interests but with aspects of negotiable convergence.
4. The integration of excessively segmented subjects is a challenge that will have its effect on vocational schools. The 'Area of Integration' is only a beginning which must be pursued. The same can be said for the technological areas, where it will

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perhaps be interesting to develop other integrated projects with the potential for establishing general understanding.

5. The schools should try to encourage an atmosphere conducive to structural and pedagogical innovation, including the development of systematic research into the phenomenon of vocational schools and also the development and enlargement of an exchange network between schools, regions and social partners.

### **Final considerations**

Vocational education cannot be identified with narrow training and unlimited specialization. It is a noble form of investment in people.

No one person is a bearer of a single vocation. Moreover, no human being can reach happiness exclusively via a single professional activity. A scientist will surely manifest inclinations to other forms of human activity, an artist is also a member of a family, a community, he or she must nurture friends and companions, and share different social callings with others.

What normally distinguishes a human being is not a single vocational trait but a broad mix of diverse interests and varied accomplishments. Thus, the business of vocational education is not to single out one sole expression of the individual but to allow a rich and balanced personal development, with due regard to inclinations and natural abilities towards particular families of occupations. Maximizing personal satisfaction requires full respect for the idiosyncrasies of the evolving self and can be combined with the goals of social utility.

This is in the interests of both the individual and society. Mr Morita, the Sony chairman, in an OECD conference we both attended together a couple of years ago, said very clearly: 'Politicians, educational systems, educators, please do not provide me with highly specialized people. Rather, give me broad backgrounds. I can train the specialist in-firm, in-house. I cannot provide for broad culture, broad educational background, broad views on contemporary issues, the understanding of the world, to people who are highly specialized at the point of arrival at my firm'.

Above all, vocational education is not a minor form of education opposed to the finest breed of general education, to the same extent that body and mind, theory and practice, knowledge and culture are not antithetical.

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John Dewey has clearly defined the major issues: 'The dominant vocation of all human beings at all times is living - intellectual and moral growth. In childhood and youth, with their relative freedom from economic stress, this fact is naked and unconcealed'.

School addresses that fascinating period of prime freedom. Therefore, it must not prevent its natural expression; on the contrary, vocational education must enhance it, through permanent discovery and the pursuit of ingenuity, through the free interplay of the infinite variety of capacities found in each and every human being.

Freedom, autonomy and flexibility are key elements in the education enterprise. They are the main guarantors in order to avoid the tragic imposition of an unwanted narrow track or the plunge into an 'uncongenial calling'. ┘

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## Vocational education's role in the reform movement in the United States

Roy Peters, Jr

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Many countries are reassessing their educational systems--reviewing ways in which children learn and re-evaluating the results expected from young people. Because so many of us are involved in the education reform process, it would be easy to conclude that we must have been doing something wrong all these years. In fact, the cause may simply be a changing world in which we live. The discussions at this meeting have been very similar to those we have in the USA: in order to have a competitive economy we must first have a world-class worker in a world-class workplace.

If there is an enthusiastic theme running through the USA at this moment, it is the theme of total quality management. And, if there is a simple explanation of total quality management, it is that you cannot just change one little thing and achieve quality: you must look at the entire system of manufacturing. That kind of thinking, in terms of trying to achieve a total quality educational system, and particularly a total quality vocational education system, is applicable here. We cannot simply improve this piece of vocational education or that piece of education and by so doing make everything right.

Approximately ten years ago when the report *Nation at Risk* was published in the USA, it argued that the nation was at risk because of the nature of its educational system. The system was not producing, according to the report, the quality of graduates needed. Many of us in education reacted immediately by adding courses and increasing our 'expectations' of our students. This was done with good intentions but without really thinking through the fact that education, and especially vocational education, is an extraordinarily complex enterprise. Recently, that fact has been recognized and now the entire educational system, including vocational education, has been included in the reform effort. In this brief presentation, I will describe to you what has occurred in the past four or five years to change the kind of graduates completing vocational programmes in the USA.

We are charged with trying to improve the image of vocational education. Often people have not thought highly of vocational education--not so much because of what the educational system is doing but because of the types of jobs available to vocational graduates. Gail Ferguson, vice president of American airlines, once said to me, 'What's wrong with vocational education? It's the image--not the image of the vocational education system but the image of the jobs for which you are training'. If a US high school student decides to become an aviation mechanic, the parents express great concern because the student is not going on to college. Their child has chosen a 'second-class' career, in many people's eyes,

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when in fact an aviation mechanic may earn substantially more money than a college graduate.

Thus one of the reform efforts in vocational education, and education in general in the USA, is to provide career awareness and career exploration activities for our young people in their elementary and junior high school years. It may at first appear that this has little to do with vocational education or educational reform in general, but in fact, for many years, our young people have wanted to know the relevance of what they are learning, in math or English or science, to the real world. Through career awareness activities in our elementary schools, we allow students to explore the range of occupations available to them so that they can begin to make intelligent career choices.

In the junior high school or middle school years, a new kind of programme known as 'technology education' is now offered in many schools throughout the USA. Technology education allows students hands-on career exploration in the areas of communications, construction, transportation, manufacturing, agriculture, health, and business. Students explore these occupational areas through various hands-on activities in short, eight-day time blocks. This allows them to develop an understanding of the occupations in, for example, the construction industry and enables them to make more intelligent choices as they move through the rest of the educational system.

Many schools have adopted what is known as a 'plan of study' for students entering the ninth grade. This is an individual plan of study for each student, outlining the student's four years of high school with suggestions based on the kind of interests that the student has begun to demonstrate. The plan may relate to manufacturing, education, health, the business clusters, or many other areas. A plan of study lists courses that the student might take. You may think that we are beginning to track students into one programme or into vocational education versus non-vocational education, but that is not the case. What we are trying to do is provide all students with the same quality of career counselling that students who plan to attend a major university have always received.

For example, let us suppose that a ninth-grade student attending school in the state of Oklahoma told the school counsellor that he or she planned to enroll, after high school graduation, at the University of Oklahoma. The counsellor, in response, would be able to list the various courses the student should take in the freshman year, the sophomore year, etc., and produce a definitive plan of study for that student. On the other hand, if a student in the ninth grade expressed

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the desire to attend the vocational school as a junior or a senior in high school, the counsellor probably would say, 'Tell me what else you want to take'. The student then would most likely be enrolled in the easiest courses available--the general education courses of general math or general science. Unfortunately, these courses are not the courses needed, in terms of academic preparation, for the student to achieve success in the chosen occupation or the vocational programme.

The planning process, then, is one that we hope all students will go through. We have experimented with some of the career concepts in a number of schools in the southern part of the USA through a project with the Southern Regional Education Board (SREB). The goal is to improve the performance of all high school students in the American South, especially those who are enrolled in vocational-technical education.

Once proper planning has taken place, we hope educators in the academic arena will recognize that not all students are theoretical learners. Abstract presentations and teacher talk with little student feedback do not suit all students. There is a difference in learning styles and one of the strengths of vocational education is that it allows students to learn by doing. Through the great work of Dan Hull and the Center for Occupational Research and Development over the past five or six years, we can now make applied courses available to students. In Applied Math I and II, for example, all the 'learner outcomes' that are in Algebra I and II are included. The only thing wrong with the class is that students like it, and you are not supposed to like what you need to learn! I express that facetiously, of course, because we have trouble convincing colleges that these applied courses are acceptable in terms of quality and level. They are acceptable, and students who complete Applied Math I and II do very well in advanced math courses.

Most high school students in the USA do not take a class in physics, and it would be extremely rare for a vocational student to take physics. It has always been regarded as a course for the advanced college-bound student. However, vocational students need to understand the principles in physics, and this can be done through the applied physics course called 'Principles of Technology'. We are not, however, getting vocational students enrolled in that course to learn the application of physics while they are in their freshman, sophomore, or junior year. We find instead that most vocational students have enrolled in the least difficult, most general science course--usually in a course called General Science which has little application for the vocational programme they are taking. The challenge is to demonstrate relevance. For example, the students in

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our health occupations always need biology and chemistry in their programme, but in the past they have seldom taken an applied biology/chemistry course, because they have not seen the relationship of the subject to the work they are interested in doing.

Then there is the need to connect the academic teacher to the vocational education programme. We find that vocational teachers can provide great motivation for students to learn. When I was teaching, 20 or 25 years ago, we had an English teacher who would use me, a vocational teacher, as a 'resource' to assign students the kind of writing assignments that they needed for my class in vocational education. Although they normally would have little interest in writing, they would be enthusiastic about these assignments because of their interest in the vocational education programme. That is just one way of applying the academics to the students' areas of interest.

We are also asking our vocational teachers to integrate academics into vocational education. There are some exciting things going on in this respect. In agriculture, for example, we found that you can use a combine harvester to teach every physics principle. It has the hydraulics, the pneumatics and electronics, the mechanical gears and drives to use in teaching physics in a very applied manner.

I recently walked into a classroom in a vocational electricity programme. There sat 16 vocational students, from small towns in rural Oklahoma, using scientific calculators to do sophisticated algebraic problems. The instructor came over to me and said, 'Use the word "algebra" in the room, and it would scare kids to death'. But they were hard problems, and the students were working them quickly. I asked the instructor how much time he spent teaching applied mathematics as part of his electricity programme. He said he spent 30 minutes a day, on Monday, Wednesday, and Friday, at the beginning of each class. I responded that many electricity instructors would say the amount of time he spent teaching mathematics detracted from the time that he should have spent teaching electricity. He said, 'Well, if they would be upset at that, I also teach applied physics on Tuesday and Thursday for one hour each day'.

The point is that industry really needs students coming out of our electricity programmes who can understand the scientific principles involved in the field of electricity and who can communicate and calculate. People who can only string wire, hang the light fixture, and put in the wall plugs are not the kind of graduates that our businesses and our industries need. So good



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vocational teachers are integrating academics into vocational education.

We are, then, asking schools to determine whether or not students have learned--not whether they have sat for two years in the seat of learning, but whether they have acquired competencies needed by business and industry. There are various methods of doing this. Educators in our southern states are now using a combination of written competency tests and performance tests to evaluate student learning. The written competency tests use scenario questions to ask the students what they would do in specific situations. Students take performance tests in the laboratory where they perform jobs industry has told us are needed to achieve a world-class, competitive workforce.

What we are doing now fits well with the Tech Prep model that Carver Gayton discussed in his presentation. Tech Prep essentially is a sequential movement of students through a plan of study that will allow them to enter two years of post-secondary education after a focused vocational education in high school. Tech Prep also gives students the academic preparation to be successful in both their vocational programme and as a member of a competitive, world-class workforce.

What we are missing is the school-to-work connection. We simply must connect these activities, these reforms that are underway, with the workplace. Many of our vocational students work already, but they do not work in jobs related to their training activity. Why not find apprenticeship situations for them? They would then have a school-to-work connection, and their eventual transition into full-time employment would be much easier.

In one sentence, our goal is to ensure that students coming through US schools are prepared for work and college when they graduate. Students who come into our vocational education system should not be in a track that does not prepare them to enter college. There is simply no reason for students to have to make that kind of choice. If we achieve that goal, we will capture the students who have not been reached by the traditional 'abstract lecture' methodology. Then graduates of our vocational programmes will substantially raise their own test scores and, in turn, raise the aggregate scores on the American College Testing (ACT) examinations and other standardized tests. However, an enormous amount of work is required from teachers and administrators before this goal can be accomplished, because it involves a different way of thinking. During the past 18 months, we have trained more than 500 teachers in this applied teaching methodology.

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There must be time for vocational and academic teachers to collaborate together to work together, and to find ways in which students can be motivated through vocational education to achieve higher academic skills.

There must be a substantial reshaping of the thinking of high school counsellors. Counsellors typically do not have a business/industry background.

There must be retraining for our vocational teachers as well as for our academic teachers. Many of our vocational teachers do not have the skills they need to teach applied physics or applied mathematics within their vocational programmes, so they must have the opportunity to learn those skills.

We must also rethink the vocational education system in the USA. Vocational school and community colleges are often found in the same cities, frequently offering the same courses and even competing for the same students. Vocational education is an expensive enterprise: it is not cheap to produce quality vocational programmes and it is certainly not possible to have high-quality programmes when there is unnecessary duplication and overlap.

A few years ago I visited China and India to meet with officials involved in vocational education. Once there, I went to the Minister of Education to talk about vocational education. But I quickly learned I also had to talk with the Minister of Petroleum, who was responsible for the vocational training of people in the petroleum industry, and also to the Minister of Manufacturing, who was responsible for vocational education for manufacturing enterprises, and so on. As I realized what a terrible system this was, I remembered that in the USA we have the Department of Labor with the Job Training Partnership Act and the Department of Human Services with their Jobs Programme and the Vocational Re-Hab Enterprise with their activities, and so on. Again, the system is cumbersome and given to duplication and overlap. We cannot hope to be successful unless the system itself is streamlined and efficient.

We have, I think, a tremendous responsibility in vocational education. If we can produce high-quality workers from our school system which will allow workers to return to our schools and be retrained and to become world-class, to become 'thinking workers' who use their minds as well as their hands, then we will have made a major contribution to the quality of life and the quality of services in our country. ┘

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## The French system of vocational training

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To understand the French system of vocational training, it is important to distinguish between initial vocational training, in which the educational institution and, first and foremost, the Ministry of National Education play a leading role, and further training, in which this role is shared by companies, the state and the regions.

Furthermore, over the past ten years educational institutions have become increasingly receptive to industry; regions and regional authorities in general have played a more and more important role; and, more recently, there has been conspicuous interest on the part of companies and both sides of industry for initial vocational training schemes.

Through the Inter-professional Agreement of 3 July 1991 and the Additional Agreement on apprenticeship of 8 January 1992, management and trade unions have claimed a greater role in initial vocational training schemes which, since their first agreement in 1970 and the law of 1974, they had previously considered as being 'off camera'.

Outside France, the image of the French system is generally distorted, often due to an inclination on the part of the French themselves to criticize their own system. The system has a rather antiquated, albeit at times prestigious image (all foreigners have heard of the Sorbonne) of a process in which general, academic education dominates; in which intellectual attainments take priority over adapting education and training to suit the needs of the economy. Finally, with Napoleon still alive in the memories of our outside observers, the French system is said to be centralized and dominated by the Ministry of National Education and compared, depending on whether one wants to be nice or not, to General Motors or the former Red Year Plan. This perception is neither correct nor fair: or at least it is increasingly less correct and fair.

THE SCHOOL AND  
UNIVERSITY SYSTEM

### **Statistical data and financial aspects**

France devotes 6.4% of its gross domestic product to its education system, and mobilizes 5 - 6% of the gainfully employed population for it. These figures are not uncommon by comparison with those of other developed countries. On the other hand, household expenditures and financial efforts in favour of higher education were still, until recently, rather below the average of developed countries.

Sixty-two per cent of young people aged 2 to 29 are in school, compared with 50 - 57% in the other developed countries. France is also the country with the lowest cost per pupil or per student, be it at

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the primary, secondary or higher education level (the Ministry of National Education spends an average of FF13 940 per pupil or student a year). The overall national expenditure of the country amounts to FF414.6 billion: the Ministry of National Education spends FF198 billion on education, or 13% of the annual expenses of the state.

### **Distribution of roles**

The system is funded as follows:

The state - 66.5%.

Regional authorities - 16.8%.

Companies - 6%.

Households - 10% (approx).

With regard to management of the system, since 1985 (law of 25 January 1985), powers and tasks have been distributed as follows:

Higher education - the state

Upper secondary education ('lycées') - regions/state

Lower secondary education ('colleges') - 'departments'/state

Primary education - municipalities/state

Regional authorities are responsible for the construction, maintenance and operating budget of educational establishments; the state retains its authority over the curricula, degrees, and teaching and administrative staff.

With regard to higher education, contracts of objectives were signed between the regional authorities and the state, which suggests that this strict distribution of jurisdiction may be undergoing significant change even in the current legislative framework.

The distribution of education between public and private educational institutions is shown in Table 1.

Table 1. Public v private education in France.

	<b>Total</b> (x10000)	<b>Public</b> (x10000)	<b>Private</b> (x10000)	<b>% Private</b>
Elementary	6700	5800	930	13.8%
Lower secondary	3255	2600	650	20 %
Upper secondary (professional)	696	534	162	23.2%
Upper secondary (gen/tech)	1570	1244	328	20.8%
Baccalaureate classes + 2	268	174	94	35 %

*The school-industry partnership* for general education revolves essentially around the cooperation at the *orientation* level - ie at the collège or lower secondary school, when a young person can make initial career plans. Numerous operations are organized under the auspices of ONISEP, which stands for the 'Office National d'Information Sur les Emplois et les Professions' (National Job and Career Counselling Board) at the initiative of the collèges themselves in cooperation with companies in the area. Fairs, career counselling open houses and promotional campaigns are organized with the active and often financial support of companies and the professional sector.

Both sides of industry have asked the public authorities to provide better information on jobs and trades and have said that they will make a conscientious effort to improve and facilitate career orientation for young people. This point has been discussed and debated by educational authorities and all its partners, because if career orientation is to be made more professional (geared to jobs and trades) and less academic (geared to courses of study), deep-rooted problems may surface during such discussions as, for example, the wish of some to reduce the limit of mandatory schooling below 16 years of age. Information about companies and the world of work beginning at the lower secondary school level is on the agenda and certain projects involve devoting part of school time to such an introduction.

The industry-education partnership is promoted by more than 20000 contracts which twin educational establishments and companies or sectors. During the 1989-90 academic year, 99.1% of professional lycées; 91.7% of general and technical lycées; and 87% of the collèges had contacts with companies.

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THE SYSTEM OF INITIAL  
VOCATIONAL TRAINING

I shall return to this aspect of school-industry partnership when discussing initial vocational training.

This system consists partly of the structure already described - ie the technical and professional courses of the public and private education and university systems, plus apprenticeship or practical training.

There are six levels of qualification in France, level VI being the lowest:

- (VI) No qualification.
- (V) Qualified blue or white collar worker (CAP and BEP diplomas).
- (IV) Technician (secondary school diploma; 'general', 'technical', 'professional' Baccalaureate).
- (III) Higher technician (Baccalaureate + 2; BTS and DUT diplomas).
- (II) Baccalaureate + 4 (Master of Science and Technology, or, soon, engineering degrees conferred by the new IUPs, Instituts Universitaires Professionnalisés or 'Institutes of Applied Sciences').
- (I) Engineer or PhD.

**The choice of a technology or professional course.**

A distinction is made between curricula or courses of technology and professional courses and degrees. The former are more geared towards, for example, the following paths:

- technical baccalaureate
  - > BTS or DUT
  - > CPGE > engineering school
  - > undergraduate studies > IUP or master's degree
  - > DEUG or DEUST > MST.

Professional courses and degrees, on the other hand, are designed to ensure direct access to employment at all levels. For example:

- Level (V) CAP and BEP.
- Level (IV) Professional Baccalaureate, created in 1985.
- Level (III) BTS and DUT.
- Level (II) IUP.
- Level (I) New engineering courses.

More specifically, a difficult job market, and a lack of visibility of careers and opportunities for further training (which remain numerous nonetheless) for young people about to join the ranks of the gainfully employed tip the balance in favour of staying in school over an early entry into the world of work. This is one reason why

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some industrial sectors offer qualified jobs for holders of CAP/BEP or professional Baccalaureate degrees, or even holders of university degrees in technology, and cannot find candidates, although the rate of unemployment among young people is particularly high.

Thus the BEPs are the springboard for the professional Baccalaureate and a considerable number of professional Baccalaureate holders try to go at least as high as the BTS. In addition, there is an increasing trend to continue after the DUT. The European 'standard' of Baccalaureate + 3 is a cause of concern for young French technicians trained in two years. In increasing numbers, they are opting for an additional year of training, or enrolling in a master's or engineering degree programme.

### **Apprenticeship**

Some 234 000 young people were involved in apprenticeship schemes in 1989-90, with 215 000 at the CAP/BEP level. The law of 23 July 1987 on apprenticeship, the national debate stirred by the former Prime Minister, and the new Aubry law (18 June 1992) have turned apprenticeship into a fully-fledged path to professional qualification, one potentially open to all levels of qualification.

Financed by a tax on salaries and by the regions, apprenticeship has in the past few months become the focus of very serious discussions on policy by proponents of apprenticeship on the one hand, and those who think they must defend the training courses of vocational secondary schools (lycées) on the other.

Apprenticeship is seen less and less as an alternative to the training system offered in vocational lycées and increasingly as another path which may be more suitable for certain young people by conferring on them the status of young employees.

The crux of the matter is more financial than ideological: who must pay for apprenticeship to develop? French companies do not seem to be as ready to invest in apprenticeship (nor in initial vocational training for that matter) as some of their European counterparts (there are only 10 000 industrial apprentices in France). Nevertheless, French companies are significantly involved in apprenticeships. Practical training in companies accounts for 50 - 75% of the overall apprenticeship time, and apprentices are monitored by specially designated supervisor.

### **Other education-industry partnerships**

#### *Lycée level*

The curricula for technical diplomas are decided with advisory bodies which include representatives of employers and trade unions.

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Training programmes are designed on the basis of skills required to practise the trade or the group of trades concerned.

There are 17 such advisory vocational committees, plus one for training programmes in agriculture.

Ninety per cent of young people who are candidates for a CAP or a BEP must sit for an examination which is less than five years old. The first professional Baccalaureate degrees formulated in 1985 were renewed two years ago.

It is worth pointing out that French diplomas are national and approved as such by most of the social partners. Nevertheless, to make it easier for young people to get jobs with local or professional requirements, the Ministry of Education has introduced 'additional training programmes at local initiative'. These programmes are designed with and accredited entirely by the professionals concerned. They contain theoretical instruction and practical training in equal proportions.

Training/work experience schemes are being extended to include school pupils. Pursuant to the Law on Education Orientation of 10 July 1989, all students enrolled in a programme leading to a technical or vocational degree must undergo a period of practical training in a company. This legal provision strengthened and amplified measures which had already been in force for a number of years: training stints in companies for CAP/BEP holders (sometimes up to 10 weeks); mandatory practical training for BTS holders; and practical training in companies for 16 - 20 weeks for new professional Baccalaureate graduates. These periods of training in companies are taken into account in the conferring of the degree.

The extension of this training / work experience scheme to pupils and students raises a number of problems regarding placement; instructor training; accreditation of attainments; updating and rescheduling of training programmes; and the training of the instructors themselves. This is one of the reasons why the social partners, following their interprofessional agreement of 3 July 1991, appealed to the Minister for National Education who established what have since become permanent consultations.

There are various other forms of partnership between schools and industry. More than 60 national framework agreements with the major industrial groups, plus more than 30 general cooperation agreements with professional sectors, set long-term objectives of cooperation, follow-up and inspection by joint steering committees.



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Agreements of the same nature and scope are also concluded by Rectors (representatives of the Ministry of Education at the regional level) and companies or trade associations of their region.

As to the establishments themselves, 99.6% of the professional lycées and 95% of the public technical lycées maintain relations with companies; more than two-thirds have concluded contracts with more than 70 companies each. These partnership contracts may pertain to:

Placement of young people in companies to initiate into the world of work or to provide them with a period of practical training.  
Organized, systematic invitations issued to young people and their instructors to attend trade fairs.  
The revision of a particular diploma or the creation of a new one.  
Further training in companies for technical instructors.  
The participation of professionals in providing theoretical instruction or information concerning their jobs.  
The creation of resource and common technological centres.  
The manufacture of special machines or prototypes.  
Training company employees at training centres or on the spot through further cooperative associations known as GRETA (GRoupements d'ETablissements pour la formation continue).

#### *Higher education and training*

Although not labelled 'professional', numerous university programmes (certain bachelor's, master's and even PhD degrees) lead to employment, such as diplomas in medicine or social medicine, teaching degrees, etc. Some entail a great deal of training / participation in work experience schemes.

Considerable efforts have been made over the past few years to meet the needs of the economy, especially in relation to the need for higher-level technicians and engineers. Furthermore, the creation of what are known as IUFMs, (Instituts Universitaires de Formation des Maîtres - 'University-level Training Institutes for Skilled Tradesmen'), in operation since last year, have led to the harmonization of professional training programmes for instructors. All instructors will henceforth receive training of at least Baccalaureate + 4.

Participation by professionals in the design of the curricula of higher training programmes to suit actual professional needs has until now been less systematic than that for training programmes at secondary level. There are twenty CPNs (one per diploma) for technology university degrees (DUTs), where professionals do participate, but they play a less important role than in the CPCs at

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secondary level. A national advisory committee is currently being set up for all DUTs. The same applies to the new IUPs (Institutes of Applied Sciences) which will also have a national advisory committee that will include representatives who are professionals.

The IUTs, which will soon be celebrating their 30th anniversary, were created at the request of companies. The companies participate in the Boards of Trustees, in teaching (one-third of the instructors are professionals from industry), in the creation of new departments, and in examination committees.

The IUPs (28 were created in 1991) are set up on the basis that half of the teaching staff are professionals from industry. Each of the three years of training is accredited with a vocational diploma.

IUPs are accredited by a committee co-chaired by a university president and the president of the Union of Metallurgical Industries (UIMM).

The 'new engineering courses' are designed to meet France's urgent needs for field or production engineers. They are given either in apprenticeships over five years (two of which are spent in companies), or through further vocational training for holders of a BTS or a DUT with five years of professional experience.

*With regard to the accreditation of professional attainments, a bill will be submitted to Parliament, extending the accreditation opportunities of professional attainments in the awarding of diplomas. Any individual who has engaged in professional activities for five years may apply for the accreditation of professional attainments which may be taken into account as part of the knowledge and aptitude required for a higher education degree. Professionals from the relevant business sector will sit on the examination committee.*

*Turning to other forms of partnership between universities and industry, partnership agreements have been concluded at local and regional levels, particularly in relation to the transfer of technology, to facilitate trade and promote research: these include contracts of research, patents, training in new technologies, and transfer of laboratory results to R&D departments of companies. Schools of higher education are taking an active part in the transfer of technology to small and medium-sized enterprises (SMEs), in particular through the EC programmes STRIDE and COMETT. Furthermore, in cooperation with the CGPME (SME Board), several universities are cooperating in a vast training programme for deputy managers of SMEs.*

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At the national level, schools of higher education are increasingly involved in framework and general cooperation agreements concluded between the Ministry of National Education and large groups of companies or industrial sectors.

Some universities will take part as operators in forward contracts for needs analyses per sector, leading to the development of training programmes initiated by the Ministry of Labour.

Finally, the Board of Higher Education has joined a 'delegation to higher education and employment' whose role will include the coordination and stimulation of further training courses given by schools of higher education. It will act as a 'prospective monitoring cell', in constant contact with the departments of the Ministry of Labour and Employment and Vocational Training, professionals, companies, both sides of industry, forecasting organizations on employment and qualifications, and in particular with its European counterparts.

#### THE SYSTEM OF CONTINUING VOCATIONAL TRAINING

Outside observers are often more familiar with this system than with France's initial training system, reviewed above. This system is financed, managed, and directed in a totally different manner.

The system is funded as follows:

The state - 47.8%.

Companies - 42.6%.

Regional authorities - 6.0%.

Other public authorities - 2.9%.

Households - 0.4%.

The national expenditure on continuing vocational training amounts to FF36.3 billion, and represents 8.7% of domestic expenditure on education. This figure has risen by 33% in constant francs since 1983, ie by decidedly more than the expenditure on initial training.

Although the regions were given jurisdiction for vocational training in 1983, their financial effort is still not comparable to that of the state or of companies.

State or regional public programmes are reviewed by advisory bodies consisting of representatives of the public authorities and both sides of industry at all national, regional and 'departmental' levels.

Funds levied from employees through a mandatory contribution of employers are managed either by the company which draws up

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its training scheme by consulting its works council, or by collecting bodies under the joint management of employers and employees. This is the case in many training schemes at company level, both for the financing of individual training leave and for training / work experience schemes which, seen from the outside, closely resemble apprenticeship or a third year of initial vocational training, but which are nonetheless jealously considered - by the social partners who have control over them - as vocational training schemes 'when all else has failed'.

Who directs the system of continuing vocational training? Since 1970 and the 'Delors' law of 1971, matters tend to be discussed first by the social partners, who reach an inter-professional agreement where possible. Then the state adopts all or part of the provisions, extending them if necessary to include categories not covered by the agreement (its own staff, for example). All laws which have followed and extended or modified the 1971 law have complied with this 'rule of the game'.

At state level, responsibility has moved from the services of the Prime Minister, to a secretary of state under the Prime Minister, to increasingly more direct supervision by the Minister of Labour, whose official title has for several years now been Minister of Labour, Employment and Vocational Training, at times assisted by a secretary of state for vocational training (this has not been the case in the last two governments).

Whether as cause or consequence, the trend in the past twenty years in the overall training policy, has been from a concerted inter-ministerial policy on 'further vocational training through continued education' to a vocational training policy as a regulatory instrument for employment policy (and the fight against unemployment).

Who carries out the training in this system? All that is needed to get into the 'further training market' is to register as a training organization with the competent government department. Further vocational training has been regulated by the market economy for more than twenty years. No organization has a captive audience, let alone a monopoly - not even the Ministry of National Education.

Six and a half million people benefitted from a further training scheme in 1989, or, in other words, 30% of the gainfully employed population. They may be categorized as follows:

Civil servants - 1.8 million.

Company employees - 3.1 million.

Job seekers - 0.9 million.

Others - 0.7 million.

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## **The school-industry partnership in further training**

### *Industry participation in training*

In addition to their mandatory financial contribution, companies often undertake to train their employees themselves, and in most cases prefer to do so on their own premises, with their own machines and in their own environment. Even when subcontracted to an outside establishment, the contents of the training and the way it is implemented are negotiated, and company professionals may also be on the training staff.

All programmes financed by public funds (integration of unskilled young people or re-integration of job seekers into the world of work) must include a substantial in-company training scheme. This in turn has an effect on the development of initial training schemes which also require partial in-company training. As a result, problems with placement capacity often arise.

### *The role of lycées and universities in further vocational training*

It is worth pointing out that public establishments have no captive market, not even for government priority programmes, as the keenest competition rages. Whereas their market share may be considered insufficient in light of their potential, their performance, as regards the number of people trained by the GRETAs or further training departments of universities, is far from negligible.

GRETAs trained 693 000 people in 1990, including 297 400 wage earners. Public higher education establishments trained 384 000 people, of whom 259 000 received salaries. The National Centre for Distance Education trained 199 000 people, including 27 500 for whom the training was paid by their company.

In 1990, the Ministry of National Education provided further training to a total of 1 276 000 people, or 27% of the beneficiaries, and 583 500 wage earners; in other words 18% of wage earners received some sort of further training.

The practice of further training can be said to have taught educational institutions to negotiate the training they offer with their users; to draw up customized training programmes; to provide advisory services on training and training engineering for the benefit of companies and in particular SMEs, to review their practices and procedures; to plan the operation of training in total partnership; and to get trainers and professionals to cooperate.

Likewise, public establishments for employee training can be said to have largely contributed to removing the apprehensions of companies concerning 'teachers first and schools afterwards'.

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A great deal remains to be done. Youth unemployment is still too high in France for the nation to sit on the laurels of the enormous progress made over the past ten years in bringing schools and companies closer together.

WHAT NEXT?

To establish close, permanent contacts between schools and the socio-economic world, the Ministry of Education has created a *National Committee on Education and Industry* which will be consulted on problems relating to the education-industry partnership.

As we have seen, however, the French system of vocational training does not come under the exclusive jurisdiction of the Ministry of National Education. The future of this system depends on all public or private partners becoming aware of its importance. The complex interplay of institutions in the development of initial and further training programmes may in the event favour the simultaneous development of several approaches justifiable more on institutional than pedagogical grounds.

Moreover, the two systems of initial and further training must be defined more closely, on the sole and overriding premise of the interests of the individual who, no matter how prestigious a degree\_ he or she may hold, still has a great deal to learn.

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## Conference conclusions

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At the end of two days' presentations and discussions, the main points which had been covered and agreed were as follows.

### **Partnership**

The concept of partnership between the world of vocational education and training and the world of industry has a long history. Partnership has taken many forms, notably apprenticeship and the alternance approach in Europe, and vocational cooperative education in the United States. A new phenomenon is our realization of the need to apply the concept of partnership between industry and education far more broadly.

Vocational education and training approaches which combine theoretical learning with practical workplace application need to be extended to all, or most, levels of training, right up to that of the university, and, some would argue, starting in the primary school. For this to succeed it is essential for us to extend the range of those familiar with the dynamics involved in such linkages. To bridge the gap between education and work, both educators and employers need to be actively and jointly involved with education and training.

### **The aim of the conference**

Against this broad background, shared on both sides of the Atlantic, this conference was designed

- to bring together a group of all those directly and indirectly concerned with the policy and provision of education and training through such partnership,
- to provide a forum for an exchange of views between European and American decision-makers on selected aspects and issues affecting partnership,
- to produce conclusions which are of value to the policy-makers and practitioners concerned.

### **Changing roles and shared responsibilities**

The active partners in education and training are government at all levels, ie European, federal, national, state, regional and local; the education and training providers; and the social partners, ie public and private sector enterprises and trade unions.

Expansion and qualitative improvement will not come about without clearly defining the roles and responsibilities of all concerned and a greater measure of agreement about them. Government should, where necessary, take the lead in this area, so

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that each partner can operate in a climate of cooperation and confidence.

### **Preparing a quality workforce**

A basic assumption to developing a quality workforce is that all our young people, not only the more successful ones, should be viewed as potentially world-class material. We need the full potential of our human resources if we are to meet the economic competition we are facing. Ways to nurture and develop the talents of every individual in our society need to be found. This is what our competitors are trying to do. At the present time this calls for a number of specific strategies and policies, on the following lines.

1. *Progression.* Young people need to be provided a choice of pathways, to take them through school and into employment, which do not cut off their career opportunities or options. It is particularly important that the choices should not limit the future options of those who decide to follow a technical or vocational route rather than an academic one. As an example, in Germany discussions are being held on introducing a new certificate in the apprenticeship system which will allow access to third-level technical education institutes.

Initial training must on no account be seen as a dead-end: it must prepare for further training and both the courses and the system of which they form part must provide encouragement to go on to it. Likewise, technical courses must be integrated with the general education system so that young people who so wish can cross from one to the other without difficulty. The nomenclature, or 'labelling', of technical/vocational courses should reflect this, by not separating them from, and thereby implying their inferiority to, general education.

The system must ensure that recognition, or credit, for what students have achieved is transferable, across the boundaries of states or regions. It must equally be recognized throughout an industry or sector. This will enhance its status as well as its economic attractiveness to young people.

2. *Guidance.* The range of pathways, including points of exit and entry, need definition and each stage of qualification needs to be clearly delineated. Too complicated and obscure a system of courses, like many of those which have grown up historically and without any planning, are in themselves a deterrent; the uniform length of the German dual system courses (three years) is, by contrast, an advantage.



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From an early stage, guidance, or career counselling, should play an important role in providing young people with a balanced view of the opportunities of the labour market and helping them choose appropriate pathways. Industrial actors should be involved in the production of high quality guidance materials; in some cases they are already doing so, eg in the US automobile industry.

3. *Status.* There is growing acknowledgement that central to a world-class workforce is a much wider knowledge and skills base than we achieve at present. This implies greater participation in post-compulsory higher technical education and training, at intermediate level, below that of university. Yet, currently, in most countries - though not all, Germany being the most outstanding exception, and Denmark another - higher status is placed on academic education and the university or college-bound student than on technical/vocational education and the work-bound student. At issue is the reality that academic education is highly valued, while technical/vocational education is undervalued. Recruitment to technical training suffers from the fact that the playing-field is not level as between technical and academic education. The status and rewards for a student pursuing technical/vocational courses or programmes need to be improved if a better balance is to be established. One way of doing this is to establish a stronger link between wage differentials and the level of demand for certain technical and vocational occupations.

In the US, a new movement is underway to address the question of balance. 'Tech Prep' education is designed to add prestige to vocational-technical education by providing a '2 + 2' sequenced occupational programme of study, starting with the last two years of secondary education and linking them with two years of post-secondary education, leading to a certificate or associate degree. In the European Community, a number of national reforms of technical and vocational provision are concerned with this issue; longer and higher-level technical courses, sometimes with *Baccalaureate* status, and easier access to higher education, are features; the French *Baccalauréats professionnels* are a good example. In other reforms, eg in Italy and Portugal, the aim is to break down barriers through providing technology-related courses to all young people in lower secondary school.

4. *Inclusiveness.* A significant proportion of our young people finish compulsory schooling with little to show for it, poorly prepared for adult life. Many drop out before completing it,

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having often acquired negative perceptions of themselves, and negative attitudes to learning. These young people are in effect being economically disqualified by their experience of education, in a schooling system based too much on traditional classroom structure and theoretical, book-based learning. They need other approaches, more activity-based, and better related to the reality of their experience and expectations. Those who leave school early need other opportunities, to recover their sense of purpose and direction in life.

Nearly all Community member states have introduced some form of reform of curriculum to teaching methods into compulsory school (general or vocational) courses to meet these needs, eg the Belgian reform of vocational education, the French 'Rénovation des collèges', and the TVEI movement in the UK. Common to most of them are: greater curriculum flexibility and use of 'modules', contact with fewer teachers in the early secondary years, more project-work, more practical activities, greater use of the out-of-school environment, more attention to guidance, and more positive use of assessment (eg less 'repeating'). In most European countries, in order to ensure that more young people take part in training, attainment targets are being set, expressed in terms of numbers and qualification levels to be achieved. In the US, the integration of academic and vocational-technical curricula is a new approach, which infuses academic material into the vocational curriculum and vice-versa, focusing on applied academic learning.

### **Quality**

A new concern with quality has now become widespread in all sectors of Western economies and is beginning to reach the education and training systems.

In both the US and Europe, the demand for higher standards and changes in industrial processes are leading to industry placing higher value on the so-called foundation or general skills or competencies. Higher quality also calls for greater mastery of basic subjects and higher order thinking skills, as well as process skills such as communication and teamwork. As the speed of change increases, new jobs and skill profiles are evolving faster. Attention to quality requires a capacity to respond faster to change. For employers this means faster processes of consultation with education and training providers; for providers, it calls for a capability to respond rapidly to new workforce training needs. For both, it implies a need to rethink how initial training is, or should be, linked to continuing training, ie life-long learning, and how participation in the latter should be related to career advancement.

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In the US, the new federal legislation for technical-vocational education stipulates that each state must develop and implement a statewide system of performance standards. However, no federal system currently exists.

In Europe, the emphasis, within each member state, is mainly on making the existing system work better rather than introducing new types of mechanisms on updating aims and content, sometimes using modular units; on establishing new or better structures and agreements between government and the social partners at the national level, and at regional/local levels, to identify and respond to new needs; on giving the training-providers greater freedom to adapt and develop provisions, within overall frameworks and policy targets; and, in some cases, on relating finance for training more closely to performance targets or ability to attract students; and on offering teachers and trainers in-service courses and setting up local and regional school-industry linking organizations. At the Community level, policy is aimed at supporting and intensifying many of these processes, and drawing attention to new trends and requirements in good time.

### **Conclusions**

1. *Partnerships.* We are in an era when solutions to developing and sustaining a quality worldclass workforce depend increasingly on partnership between education and training providers and industry; and between them and government, at all levels. The 'teaching firm' (*l'entreprise formatrice*), an unimaginable concept only a few years ago in some parts of Europe, is here to stay. Partnerships provide the means for linking the classroom and the workplace, for diversifying provision, for speeding up our response to changing needs, and for developing links between initial and continuing training.
2. *Roles.* Basic requirements are structures and agreements that clarify the roles and responsibilities at each level, so that partnerships can form and function smoothly. All partners should be involved in creating the conditions, in terms of financial and staff support, for effective partnership models. Governments must play their part by setting the right climate and encouraging partnership development. The development of a consensus about the importance of training in societies which lack it for historical reasons is a necessary and long-term task. So is the development of a system of training, both initial and continuing, and of certifying it, which reflects the characteristics outlined above.
3. *Firms.* Firms must participate in sectoral groups concerned with the quality and content of training, through whatever bodies or

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structures are formed at national, regional or sectoral levels for this purpose. At the local level, they should help schools and colleges to train students on up-to-date equipment, eg by offering access to such machines in their plant or by placing them in the technical training institution itself. They should accept teachers, especially those responsible for career guidance in high schools, into their firms on placements, to help them learn about the reality of modern industry.

4. *Progression, status, participation.* The route to a quality workforce includes placing more emphasis on progression; on giving greater equality of status to the technical-vocational pathways; and on paying more attention to the needs of those who now fail to become qualified. These priorities, and the need to pay more regard to quality in its many different forms, illustrate well the need for partnership action, since they are not matters which the school or college system can carry out alone.
5. *Disadvantaged youth.* If governments aim at near 100% participation in initial training, they must be prepared, with the help of firms, to set up facilities and courses which meet the situation of those young people who
  - cannot find apprenticeships or other appropriate occupational preparation, for whatever reason,
  - are impeded, by family and economic circumstances, from participation in the regular system,
  - are demotivated, some of them as a result of their experience in compulsory school, and need help to rediscover the value and rewards of training.
6. *Small and medium-sized firms.* Special attention should be focused on the training needs of small and medium-sized firms. The special structures and procedures required to engage them in the training and retraining process should be developed. The experience of countries with such structures (eg Germany and Belgium) should be studied.

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7. *Common problems and solutions.* The discussions between American and European policy-makers at this meeting clearly demonstrated the common nature of both the challenges and potential solutions. 'Export' of full-scale training systems is not possible, but many of the basic concepts lend themselves, in an adapted form, to usage in other countries. It is also clear that all partners in governments, trade unions and employers, organizations, must take part in the process.

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