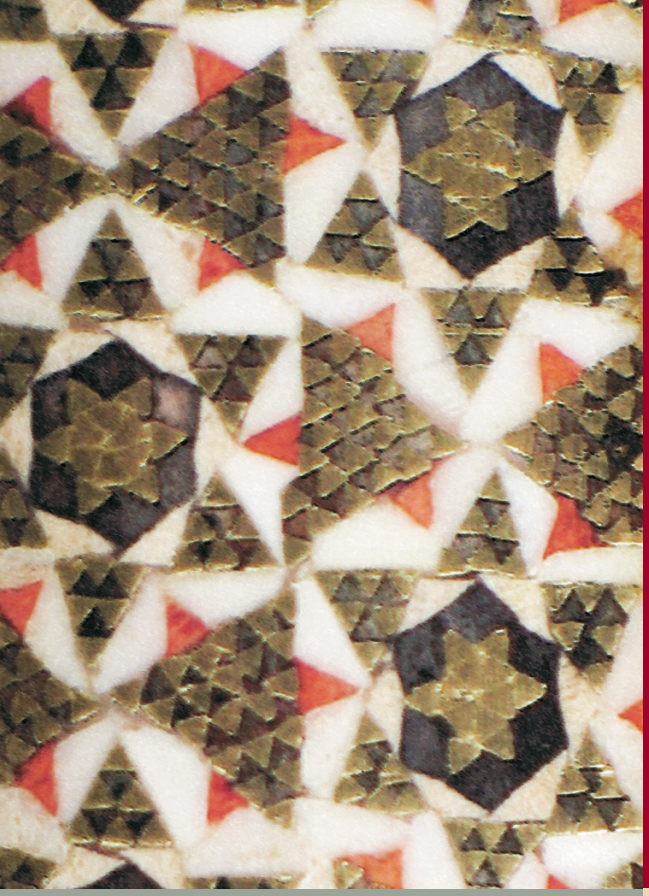

Nematollah Azizi and
Johanna Lasonen

Education, Training
AND THE ECONOMY

Preparing Young People for
a Changing Labour Market

INSTITUTE FOR
EDUCATIONAL RESEARCH
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Table of Contents

Preface

Education, Training and the Economy

Preparing Young People for a Changing Labour Market

The mission of education and training is to enable nations and individuals to achieve well-being and a good life. But what is the purpose of technical and vocational education and training (TVET)? Advanced TVET systems endeavour to provide vocational students with lifelong learning competencies, for example by qualifying them not only for the labour market but also for post-secondary and higher education, and seek to enable them to alternate between work and education. The status of TVET in a given country is seen in (a) its degree of integration with the educational system as a whole; (b) the amount of public funds devoted to developing it within the educational system; (c) its viability as an avenue to national and individual success; and (d) its ability to attract young people and the adult population as an educational option. Against this background, the chapters of the book cast light on education and training from the twin perspectives of liberal and occupational education. Liberal education and TVET, pursuing different but not mutually exclusive objectives, generate human and social capital for the needs for the world of work. In our book, we discuss liberal and general/academic education, technical and vocational education and training, workforce preparation and career education as complementary national and international efforts.

The idea for *Education, Training and the Economy: Preparing Young People for a Changing Labour Market* was born in 2003, when we met at a conference on intercultural education organised by UNESCO Chair Johanna Lasonen at the Institute for Educational Research, a separate institution of the University of Jyväskylä, Fin-

land in June 2003. As educators we became interested in investigating what roles education and training have played in global evolution. Is there a parallel between an increasingly globalising economy and a viable universal concept of education for all? Global disparities such as the digital, economic and educational divides and the gap between rich and poor regions, the South and the North and vice versa, and between the developing and developed countries challenge national and international decision-making to make a good life equally available for all people.

Here the Education for All (EFA) process represents a worldwide endeavour to enhance education and training opportunities and ensure universal access to education. It covers basic education and TVET. Every country, industrialised and developing countries in particular, evolves its vocational education and training systems from distinct starting points. There are national differences in the degree to which TVET has been integrated into the educational system and in the nature of the task and role that it performs in the context of individual learning and the expansion of human capital. Ensuring girls, particularly girls living in rural areas, access to education remains a great international problem. This despite the fact that research findings demonstrate a positive link between women's levels of education and national economic development.

A scholarship from the Academy of Finland made it possible to invite Dr Nematollah Azizi to visit the University of Jyväskylä in 2004–2005 as a member of the research team on International Development in Education and Training led by Dr Johanna Lasonen. Additional resources for publishing the report have come from the Institute for Educational Research and from Kurdistan University in Sanandaj, Iran. Our special thanks go to these three organisations. We are grateful to a number of people working with Jouni Sojakka, head of the Institute for Educational Research's Publication and Information Unit, especially Kaija Mannström, for their technical support.

Professor Allen Phelps from the Center for Education and Work at the University of Wisconsin-Madison, USA, has reviewed the manuscript of the book. We are very thankful for his valuable feedback, which helped to improve the text. Hannu Hiilos has efficiently checked its language. His professional editing skills deserve special mention.

The book reviews the evidence for the economic impact of education and training in the past thirty years and uses the literature to draw a number of lessons that might be useful to its readers. Its intended audience are people interested in devel-

oping educational systems in general and technical and vocational education and training in particular at national, regional and global level. We especially hope to reach undergraduate and graduate students, administrators, planners, guidance counsellors, teachers and people involved in research and development work and in development co-operation and teacher education.

Dr Johanna Lasonen
Jyväskylä, Finland
October 2005

Dr Nematollah Azizi
Sanandaj, Iran

An Overview of Recent Challenges

Most of the many reforms and changes in direction that have been a marked policy and practice in educational systems in recent decades have been focused on the relationship between the education and training system and the economy. It seems that educational reforms and practices are driven by a need to rethink the link between education and employability. To meet this crucial need, it is necessary to have a clear idea of the nature of the connections between education and the economy and be familiar with different conceptions of liberal (general) education, the theme of education for work, and reforms undertaken with the vocationalisation of secondary education as their central point.

In this context, makers of educational policy should urgently step back and reflect on recent educational reforms, reaffirm old convictions and successful practice where appropriate, sift out the best among new ideas and experiences and implement them, modifying or abandoning those which are a distraction from the central purpose of schooling systems; in short, they should ensure that an education of high quality (customer-oriented education) is readily available to all young school leavers.

In this book therefore, we propose to make sense of the numerous trends in and challenges involved in efforts to link education with the economy. Thus, in the first chapter our aim is to examine the theme of education and the economy and the relation between the two in both theory and practice. Here, the role of education in economic development and productivity on the one hand and school leavers' and graduates' employment prospects on the other are issues which must be discussed in our rapidly changing technological era. In the second chapter we analyse conceptions of liberal (general) education. It may be said that liberal education enables

learners to acquire lifelong skills: analytic techniques, a willingness to temporarily suspend one's judgement, and an ability to revise one's conclusions as additional information arrives. Associated as these competencies may be with a liberal education, they are also the qualities of mind connected with success on the marketplace. And it is these essential abilities and skills that have been highlighted by companies and employers who are looking for them in their future workforce.

The theme of education for work, or the idea that education should have economic relevance and a vocational purpose as well as concern for the personal development of the individual, has been around throughout the history of state education in all industrialised societies. Indeed, achieving an understanding of and preparing students successfully for the world of work is an important aim of educational systems which must be analysed. A consequence of, if not an assumption underlying, this thinking is that education might serve society by providing it with labour and by making this labour more efficient. Schools select, educate and certify students to meet the requirements of commercial and governmental enterprises. It has been argued that young people ought to be taught how industry generates a nation's wealth and that they need to reach maturity with a basic understanding of the economy and the activities which are necessary for the creation of national prosperity. The third chapter, therefore, concentrates on technical and vocational education and training (TVET) and the concept of education for work as representing a movement which is seeking to vocationalise secondary education and bridge education and working life through an emphasis on lifelong learning and suitable curriculum aims and contents and the appropriate organisation of schooling.

The next chapter examines the emergence of a strong partnership between education and business, which has been seen as an important element in different countries' policies for improving national competitiveness in the global economic race. This is reflected in significant investment in this field by both educational and business organisations. Many employers have some sort of involvement with schools. Some recent studies in Finland showed that around three in four employers have established links with educational organisations with a view to satisfying their own longer-term skill requirements. Such partnerships vary in their approaches and aims. They may produce some benefits for both schools and industry. Therefore, if we place these links on a continuum, it is possible to see two different emphases. Some companies are taking a strategic decision to involve themselves in many aspects of educational activities, while some others have only a positive intention to do so.

Despite some four decades of new thinking about and programmes for strengthening the technical and vocational aspects of schooling, long-established policies and practices in the worlds of both education and work have been called into question. Therefore, technical and vocational education and major issues relevant to them are discussed in Chapter Five from a comparative perspective, particularly as between industrialised and developing nations. Although several criticisms have been raised concerning the efficiency of TVET, it continues to be seen as an instrument for creating a more productive workforce capable of increasing national prosperity. In this respect, numerous policies have been formulated and introduced in many countries to reform technical and vocational education systems and thus ensure the training of a more efficient labour force able to compete internationally. However, there is a great deal of evidence that governments' efforts at reform have not resulted in improved outcomes. There may be a variety of reasons for this failure, such as incompetent leadership and management at the political and business levels; a failure to implement a successful reform of industrial relations; and inadequate levels of skills attained through measures carried out to reform training. While the uncritical development of vocational education and training policies by governments as a panacea for many current social ills, such as unemployment, is rightly being subjected to close critical scrutiny, the quality of TVET remains a major issue.

Our purpose in the last chapter is to bring all the trends and issues discussed in the preceding sections of the book together into an overall picture which makes it possible to see everything as in a thumbnail sketch. High-quality education and training systems are directly linked to endeavours to increase productivity and work efficiency with a view to meeting intensified international competition. In an age when reverse engineering has become an art form and a wealth of natural resources no longer carries any substantial advantage, the only sustainable resource lies in skills available for development. Educational systems of poor quality are unlikely to either maintain previous levels of skills and knowledge, generally agreed to be less than optimal given the changes that have take place in the nature of work, knowledge and skill as a result of technological innovation and economic developments, or enhance skill levels and prepare individuals for further change as a means of remaining internationally competitive. However, in the twenty-first century, when two main features of modern economies, increased job mobility and enlarged job responsibilities, make skills even more valuable, it is the responsibility of both policy makers and employers, for the sake of both systems, to close the gap between

education and the economy. Thus, at a moment when it seems that the workforce of the future must have as broad a range of intellectual skills and understanding as possible, there is an unquestionable call for a renewal and restructuring of the educational system.

CHAPTER ONE

1 Education, Training and the Economy

Introduction

Since the late 1960s, social theorists have written about the coming of a post-industrial era in which technology would lead to new and faster methods of acquiring, processing and distributing information across the globe and thus to a revolutionary transformation of modern, industrial society (Castells, 2000). As a result, a growing number of economists, educators and even politicians have turned their attention to a study of the relationships between education and the economy. Although the connection between these two has been called the crux of the matter in terms of its impacts on and roles in economic development, during this time several theories have been put forward and received criticism. In fact, much of the literature on educational reforms around the world focuses on attempts to theorise about and establish a relationship between the education and training system and the economy and improve it (Wössmann, 2002; 2003). In this regard, educators have discussed terms and concepts such as education economic links, education and the world of work, vocationalism, school and industry partnerships and so on. What is important, however, is realising that the rapid technological and economic changes marking this century and the necessity of co-operation between education and the economy as a means of preparing young people for its high-skill labour market are a significant issue that must be reconsidered.

Given this, the swift transformation of technology and critical and powerful phenomena such as globalisation and internationalisation have been highly attractive to makers of educational policy at national and international levels as starting points for rethinking the nature of the relations between education and the econo-

my. As many studies have shown, these developments have already led to increasing changes in the nature and circumstances of working life.

Links Between Education and the Economy

Since the very beginnings of the industrialised life of human beings, the connection between education and the economy as two essential sectors of society has been recognised and analysed by economists. Among them, Adam Smith, John Maynard Keynes, Alfred Marshal and, more recently, educational economists like Becker, Shultz and their colleagues in the late 1950s and the early 1960s have raised the question of the important role of education in economic development. International studies and figures have indicated a direct correlation between economic development and educational improvement (Psacharopoulos, 1988; OECD, 2004). Educational levels and the quality of education are higher in the developed than in the developing countries. This leads us to another question: does the level of education in these countries affect their economic growth, or is it economic development that affects education? The interrelation between the educational goals represented by and pursued in schools and the demands made on school education by working life has a long history that "can be traced back to the period when the first schools were founded" (Feuzat, 1978).

This interplay can be understood as an unbroken series of controversies pointing to the social and economic functions of school throughout the various periods of history. Dewey (1916) and Mitter (1987) have drawn attention to two different views of or philosophies concerning the relationship between education and industry which continue to shape the educational policies of many societies. These two standpoints are: has school been established primarily as a place where young people are taught abilities and skills necessary for their subsequent occupational career? Or has the essential function of school, rather, been to protect the young from the harmful and dangerous influences of the world of work as long as this is considered possible and justifiable? To prevent misunderstanding, it should be said here that these two contrary philosophies have never been conceived as absolute dichotomies, nor have the structure and content of school practice been totally subordinated to goals determined by either of them.

It seems that recent progress in collaboration between education and the economy, or what is called in some countries co-operative education, may be the result of an acceptance that it is important at all stages of education to link the process of learning to practical application, preferably at a considerable remove from the classroom (Linklater, 1987; Finch, 1996; Grubb, 1999). This trend can be seen in both secondary and higher education.

As a characteristic of North West European countries such as Germany, the Netherlands, Sweden, Finland, and Norway, the practice of linking the place of learning to the place of work stems from a long tradition of co-operation between secondary schools and the wider community (Partee, 1994; Brown & Behrens, 1996; Lasonen, 2000a). Moreover, there is strong faith in North America in the value of post-experience professional education (Daggett, 1992; Phelps, 1998). However, given the historical connection between education and the economy economists have, on the one hand, sought to explain the role that education plays in economic growth. On other hand, they have wished to determine what kind of education has the potential to be more effective than others in fostering economic development. According to Klees (1986), an educational economist,

> in education, for example, all of a sudden the conventional wisdom seems to be arguing that we know some policies that are best, in most contexts, worldwide: that primary education is the best investment; that improving the quality of education, especially at lower schooling levels, is more efficient than expanding access (p. 604).

In general, education is today being seen both as a human right and a precondition of social well-being and economic growth. The World Declaration of Education for All (EFA) issued in Jomtien, Thailand in 1990 pointed out that education is a fundamental right. The EFA Dakar Framework focused on six educational goals: providing early childhood care and education; ensuring all children, particularly girls, access to compulsory primary education by 2015; meeting the learning needs of all young people and adults; attaining a 50 per cent improvement in adult literacy by 2015, especially for women; eliminating gender disparities in primary and secondary education by 2005 and achieving gender equality in education by 2015; and improving all quality-related aspects of education and promoting the achievement of learning outcomes, especially in literacy, numeracy and essential life skills.

Drawing on the experience of more than 190 countries, the *EFA Monitoring Report 2005* (UNESCO, 2004) stated that

> better education contributes to higher lifetime earnings and more robust national economic growth, and helps individuals make more informed choices about fertility and other matters important to their welfare. For example, it reduces exposure to HIV/AIDS: research shows that cognitive gains from basic education are the most important factor in protecting teenagers from infection (p. 3).

Education of high quality leads to higher productivity and more equal distribution of income (Wössmann, 2003).

The aim of the EFA process is to guarantee such basic competencies as literacy, numeracy and writing skills. How much and with what aim children are offered craft education, wood- and metalwork, music education and so on as a means of diversifying their learning during basic education varies from country to country, as does the availability of pre-vocational education and/or TVET as alternative options for young people. In Finland for example, a little less than half the 16-year-olds enter target-oriented three-year vocational programmes that will qualify them to apply for a job in the world of work. In vocational education for young adults in Austria, Germany and Switzerland, the corresponding figures range between 60 and 75 per cent. In Iran, by contrast, education catering for children and young adults is mainly academically oriented and theoretical.

In different ways, economic changes have affected the nature of the skills which the education and training system might develop in young people. A comparison between the stages of Fordism and post-Fordism (Table 1.1) in developed countries and the nature of the skills and abilities associated with each stage reveals two distinct conceptions and types of skill: ”old skills” and ”new skills”. It is probable that dramatic economic changes will force educational institutions to create new forms of skill, ability, and attitude to meet the shifting demands of the economy. It seems that it is the economic changes that have prompted makers of educational policy to restructure the educational system in an attempt to raise educational standards. It is important to clarify the differences between the old and new forms of skill if policy makers are to be able to manage educational reforms successfully.

Table 1.1 *Characteristics of Fordism and Post-Fordism* (Brown & Lauder, 1992, p. 4.)

Fordism	Post-Fordism
Economic, competition and production process	
Protected national markets	Global competition
Mass production of standardised products	Flexible production systems/small batch/niche markets
Bureaucratic and hierarchical organisations	Flatter and flexible organisational structures
Competition by full capacity utilisation and cost-cutting	Competition by innovation, diversification, subcontracting
Labour	
Fragmented and standardised work tasks	Flexible specialisation/multi-skilled workers
Low levels of trust/discretion Most workers employed in the manufacturing sector/blue-collar jobs	High levels of trust/discretion Most workers employed in the service sector/white-collar jobs
Little on-the-job training Little formal education required for most jobs	Regular on-the-job training Greater demand for knowledgeable workers
A small managerial and professional elite	A growing managerial and professional class/services class
Fairly predictable labour-market histories	Unpredictable labour-market histories due to technological change and increased economic uncertainty
Politics and ideology	
Trade union solidarity	Decline in trade-union membership
Class-based political affiliations	Declining significance of class-based politics
Importance of locality/class/ gender-based lifestyles	Fragmentation and pluralism, global village
Mass consumption of consumer durables	Individualised consumption/consumer choice

Although many educationalists still interpret skills in terms of the old senses of the word, the new meanings of "skill" can be said to include knowledge-related and cognitive elements which were not a part of the old sense. According to Paczuska (1996, p. 9–10), the main differences between the old and the new skills are:

- Where the old skills divided the working population into skilled and un-skilled labour, the new skills call for a higher level of general competencies across the working population as a whole to provide a starting point for

learning new skills. These general or core competencies include basic educational achievements such as numeracy and communication and the ability to use information technology and speak a modern foreign language.

- Where the old ideas of skill were based on job categories, the new skills emphasise the need for flexibility to enable moves from one job to another. This requirement is manifested in the concept of transferable competencies such as problem-solving and interpersonal skills which, it is believed, are portable from one context to another.

- Where the old skills were associated with manual dexterity and technical ability, the new skills are linked with intellectual knowledge and ability.

Countries rich in human resources have demonstrated that they can develop even if they are poor in natural resources. Particularly good examples of this are Japan, Finland and Germany, which in 1945 started with very little. For this reason, improving the skills and quality of people as productive agents has been a central objective of development policies. Again for this reason, economists have always emphasised the economic importance of education. For example, Alfred Marshal declared: "Knowledge is our most powerful engine of production; it enables us to subdue nature and satisfy our wants." Theodore Schultz argued that "while agricultural development is of paramount importance, the decisive factors of production in improving the welfare of poor people are not space, energy, and crop land; the decisive factor is the improvement in population quality" (quoted in Emadzadeh, 1995, p. 27).

However, this study focuses on the dimension of human capital, in which education is seen as a process that improves people's skills and abilities and therefore their productivity at the workplace. Thus, in so far as it enhances the skills and therefore the productivity of workforces, greater educational attainment seems to boost an economy's output of goods and services and, more generally, to contribute to the process of economic development.

Education and Economic Productivity

Over the past two decades, most successful economies have given high priority to education, skills and training as vital elements in their economic prosperity. There is an increasing body of evidence linking investment in education and training to improved economic performance, ranging from detailed comparative studies of training in various European countries (e.g. Prais, 1981; 1989; Machin, 2005) to much more general studies of the impact of education and training on the process of economic growth (Romer, 1986; Solow, 1991; Wössmann, 2003). In the production process, at least four factors have essential roles where a number of reactive conditions influence each other. These factors, identified by neo-classical economists (Becker, 1975), are shown in the following equation:

$$\mathbf{Y = f\,(K, L, T, Q)}$$

Y = output production
K = physical capital
L = labour services
T = technological progress
Q = labour quality or human capital in addition to labour services.

An analysis of these factors reveals that at least two of them probably involve education. Education seems to affect the structure of technology and to enhance its performance by preparing people to use it. In other words, although in the post-Fordist era economic productivity depends on many factors as well as on a restructuring of the economy, educational organisations are likely to play a conspicuous part in this process. Thus, it is possible to argue that the contribution that education makes to economic productivity is seen in its preparation of young people who are creative and capable and have a range of flexible skills.

The importance of labour force quality as a determinant of aggregate economic growth is obvious. Productivity and income levels are highly correlated with levels of educational attainment and professional skill. However, developing precise estimates of the contribution made by education faces many problems. First, it is far from clear how skills and competencies might be best defined and measured. Different types of education and training have different impacts on economic performance, and before we can design a common index in the first place we must have information on the relative weights of these different types of education and train-

ing provision. Second, the mechanisms through which skills might affect economic performance are complex and varied. They are also conditioned by the availability and quality of other factors of production and by contextual economic and social conditions. Taking full account of these interrelationships poses a very difficult task for empirical analysis. Finally, economic performance itself has many facets. It might be considered either in terms of the level or rate of the change of output or from the perspective of productivity and living standards; there is also the question of choosing the time horizon over which to assess performance (Johnes & Johnes, 2004; OECD, 1994; 2004).

Going beyond the neo-classical framework, several authors have argued that educational levels are indigenously linked to the growth of productivity (Figure 1.1). The argument here is that in general, an educated, motivated and flexible labour

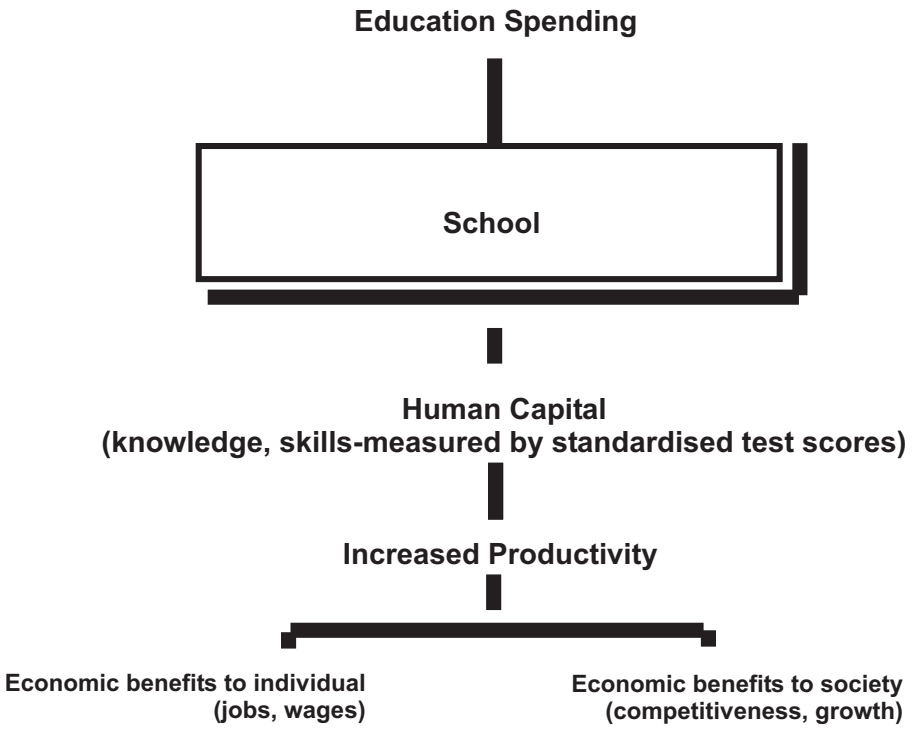

Figure 1.1. *The link between educational spending and economic development* (NEA, 1995).

force will most likely be able to adapt more easily to new processes and new techniques and hence allow productivity to rise more rapidly. Moreover, in models such as those worked out by Romer (1986; 1990), highly educated individuals play a key role in the sector of the economy that creates new technology which, in turn, is closely related to the proportion of R&D (research and development) in total output. The flow of new technology and the growth of productivity seem to be connected with this proportion (OECD, 2004). There may also be positive externalities from human capital: where the average level of human capital is high, the incidence of learning from other people will be higher, and it is likely that there will be greater productivity gains derived from the exchange of ideas (Lucas, 1988; Wössmann, 2002).

Some Empirical Results

Corroboration for the economic effects of education can be divided into two distinct types: micro- and macro-level evidence. Micro-level evidence involves the rate of return to investment in education. At the macro level, if investment in education yields returns at the individual or societal level, this might be reflected at the level of the economy as a whole (Meier, 1995).

If educational expenditure is considered a form of investment, there are several ways to assess rates of return to educational investment. They can be calculated as the individual or societal rate of return or the private or public rate of return or as the rate of return by type of curriculum (general or vocational secondary education) or type of economic sector or gender (Psacharopoulos, 1991b). In this specific field, Psacharopoulos' works have summarised hundreds of studies conducted, in the past thirty years, to find out the profitability of investment in education in a large number of countries across the dimensions mentioned above.

The rate of return to secondary schooling or higher education is much higher than that to vocational education. Psacharopoulos (1985) has argued that this is because of two factors. First, the unit cost of vocational education is, at any level, higher than that of general education. This is because vocational education entails more specialised staff and equipment. Second, those completing general programmes seem to be more flexible in the sense of fitting into a wide spectrum of occupations, and so perhaps are more easily trained on the job as compared to people with vocational backgrounds who are earmarked to enter a particular occupation. In other

words, a more general curriculum probably leads to a higher rate of educational return if TVET has been delivered entirely at school. By contrast, in many countries with dual systems where TVET is the most attractive educational pathway among the young we find that it is vocational education that leads to high rates of educational return.

One study, covering 29 countries and five continents, found estimates of the role of education in accounting for economic growth that ranged from as low as 1 per cent in Mexico to 25 per cent in the United States (Psacharopoulos, 1984, pp. 340–346). Similar findings are reported by Bowman (1990). Englander and Gurney (1994) cite 24 studies covering seven OECD countries whose estimates of education's contribution to output growth vary from 3 to 27 per cent. More recently, Psacharopoulos and Patrinos (2004) have compared returns to education with real interest rates across countries with returns on physical capital. They concluded that the returns to investment in education (e.g. private return to an extra year of schooling in the United States) are likely to exceed those to alternative forms of investment by around 10 per cent a year. Returns are higher in the developing countries where human capital is scarce.

Several empirical studies have been carried out in the tradition of the new growth economics. One cross-country study of 98 countries finds that the education variable, measured as the proportion of the working-age population that is enrolled in secondary school, contributes positively to levels of productivity (Mankiw et al., 1992). Another study (Barro, 1991) examined the average growth rate of real GDP per capita between 1960 and 1985 for 98 countries. The set of explanatory variables included two measures of the human capital stock, the 1960 enrolment rates in primary and secondary education respectively. A regression analysis produces statistically significant coefficients for both education variables.

Thus, it is possible to conclude that the skills and competencies of the labour force are significant determinants of measured economic growth and productivity performance. What the results of these analyses indicate is that rather than bringing economic benefits only to those individuals who undertake education and training, investment in these areas confers advantages also on the economy and society in the form of higher output and productivity growth. Reviews of the effects of education and training on labour market experience have highlighted four important findings:

- People who have been educated and trained better are most likely to have higher earnings. Moreover, it seems that the most pronounced disparity is between those who have completed upper secondary schooling and those who have not (OECD, 1993; 2004).

- There is a positive correlation between low levels of educational attainment and unemployment rates.

- There is some evidence that the earnings gap has widened over the last decades. While very low levels of attainment are consistently associated with low relative earnings, the gap is more variable in its size and changes over time at other levels of educational achievement.

- Generally speaking, better-educated workers seem to enjoy more opportunities for formal training within the firm, which can imply widened occupational horizons and increased earnings.

Does education really improve economic and worker productivity? The most usual explanation for the positive association between educational attainment and individual success on labour markets is probably that schooling contributes to the development of productive skills and knowledge. However, another interpretation is that education simply serves as a mechanism for selecting individuals who are inherently more productive, or from a certain social background, and certifying their ability to employers (Berg, 1970; Arrow, 1973; Spence, 1973; Stiglitz, 1975; cf. Kivinen, Silvennoinen and Puustelli, 1999). This particular view has itself been attacked theoretically and empirically. In theory, if ability is multidimensional, then schools might play a productive part by helping people sort themselves into jobs that require their particular abilities even if their education did not also augment those abilities (Willis & Rosen, 1979; Garen, 1985; Ruohotie & Koiranen, 2000). More direct empirical evidence of education's role in productivity has compared the returns to schooling among self-employed individuals with its returns among wage and salary earners (Tucker, 1985; Grubb, 1993). The findings indicated that rates of educational return are at least as high among self-employed workers as among wage and salary earners, showing that schooling does foster economic productivity instead of being merely a screening device.

At the same time, we have to take into account that most people might not want to become entrepreneurs if secure jobs are available. A survey in Finland by Lasonen (1999a) revealed that more than half the young people covered in the study (54% out of 420 students aged 17–25) had never entertained the idea of setting up a business of their own. Two out of ten had sometimes thought about doing so. About the same proportion (22.8%) of them had considered a private enterprise as a makeshift solution. A substantial number of the respondents (66.5%) judged that their work experience had done little to improve skills needed in establishing an enterprise. Three informants (amounting to just 1% of all respondents) had already worked as entrepreneurs. These are discouraging results given that an objective of vocational education is to furnish students with skills and knowledge needed to be able to operate as an independent entrepreneur.

To return to a more general consideration of education, working life and the economy, in his review of studies around the world of variables which affect the performance of the economy Ingham (1995) emphasised that when education is measured as the percentage of school enrolment rate, it is significantly related to income distribution. Upper secondary school (ISCED 3; high school) enrolment rates are strongly associated with a more equal distribution of income. Another study (Brown, Reich and Stern, 1992), adopting a different approach, examined the contribution of human resource variables, including training, in a group of American firms. Their pursuit for a definition of productivity led the researchers to identify a ”high-performance work organisation” as featuring a capacity for problem-solving and continuous improvement of products and production. They also found that training and employees' ability to carry out different tasks were important determinants of the viability of a high-performance work organisation.

Although education may, in some cases, serve more to screen for what is seen as inherent productivity than to actually enhance productive capacity, for the purposes of policy the conclusion is that education likely does boost productivity.

> This effect appears stronger with respect to lower levels of educational attainment, and diminishes at higher levels. Education does this, evidently, by providing knowledge and skills that can be used at work, improving the ability of individuals to communicate and co-ordinate, and better enabling them to learn new tasks and to acquire new information. (Middleton et al., 1993, pp. 42–43.)

As a result, there is a tendency to consider that the creation of new education and training programmes is a significant positive predictor of productivity change. This seems to show that the level and distribution of skills and competencies in a nation's population and labour force have important consequences for economic efficiency.

While these studies make out a strong case for investing in education and training as a means of securing and improving the long-term prospects for good economic performance, they are not very helpful in giving advice on how to decide precisely what forms the education and training provision should take in order to achieve these goals. The need for flexibility, multiskilling, the importance of information technology-related skills, employability and positive personal attitudes towards work are some of the themes which have been highlighted by employers and modern business studies. The bottom line, however, is that each programme of education and training must be assessed on its own merits. Funding such programmes in the hope that they will generate virtuous circles of the sort which have been brought to the fore by Prais (1989) and Romer (1987) can be easily criticised. Indeed, formative monitoring is essential as a way of ensuring that the types of education and training being delivered meet real needs. If an educational system is constructed on such a basis, some economic benefits can be anticipated.

The Role of Human Capital in Economic Growth

The importance of the human factor in technologically advanced economies is nowadays acknowledged by many educationalists and economists. The skills and qualifications of workers are viewed by companies, obliged to invest more and more in human capital in order to maintain competitive positions on rapidly changing world markets, as critical determinants of effective performance. Hence the heightened sensitivity of the business community is directed to educational deficiencies. Thus, if a society is to stay competitive in a global economy, it is the duty of its managers to take more account of the qualities possessed by its labour force. It may be assumed that a workforce with high-quality knowledge and skills will be able to produce high-quality goods and services. And it is also the duty of the basic education system to strive for teaching, instructional materials and curricula of a better quality. Therefore, the educational aim is, perhaps, to achieve a better balance between gen-

eral studies and work-oriented training and keep abreast of innovations in the outside world.

The early explanations of the concept of human capital argued that education and training raised the productivity of workers, and, hence, increased their lifetime earnings by imparting useful knowledge and skills. However, this view was attacked soon after by critics (Braverman, 1974) who rejected the idea that education improves productivity by teaching knowledge and skills needed in the world of work. As they saw it, education acts simply as a screening device which enables employers to identify individuals who possess either superior innate ability or certain personal characteristics, such as positive attitudes towards authority, punctuality or motivation, which employers value and which are therefore rewarded in the form of higher earnings (Woodhall, 1987; Emadzadeh, 1995). However, the fact that employers continue to pay educated workers more than uneducated ones throughout their working lives seems to refute this (Psacharopoulos, 1979). Woodhall (1997) argues:

> even if the new version of this argument – *Screening Hypothesis* – is rejected, and it is difficult to see why no cheaper means of identifying workers with desired characteristics has not been developed, if education really had no effect on productivity, it is nevertheless true that the idea of education has been important in influencing recent directions in research in the economics of education (p. 33).

Blaug (1976), reconsidering the empirical status of human capital theory, has predicted that, in time, the screening hypothesis will surface again. Possibly this will mark a turning point in the "human investment revolution in economic thought", a turning point to a remarkable position.

As Woodhall (1997) remarks, the screening hypothesis is important because it focuses attention to the precise way in which education or other forms of investment in human capital influence productivity. Also, it serves as a reminder that education does far more than transmit knowledge and skills. The probable reasons why employers continue to prefer educated workers are, first, that the possession of an educational qualification indicates that an individual has certain abilities, aptitudes, and attitudes. Second, the educational process helps to shape and develop those attributes. In other words, there is now a tendency to recognise that education both provides knowledge and skills and shapes attitudes, motivation, and oth-

er personal characteristics which influence the productivity of people at work.

It seems, then, that the concept of investment in human capital as investment in people's abilities and attitudes is still valid. Further, it could be interpreted, comprehensively, as covering all factors and activities which affect not only personal attributes but also skills, and it must include the realisation that such activities increase workers' productivity in various ways. As Stronach (1989) pointed out, the equation at the heart of the discourse of human capital is this:

good education/training = higher worker productivity = economic success

However, the gaps and uncertainties in the above interconnections are still a legion. A great many studies have criticised the theories which explain this equation, such as human capital theory. Stronach (1989) has summarised most existing criticism as follows. First, as the critics see it, the economic science behind these connections between education, worker productivity and economic success is hopelessly fragmented between monetarist, neo-Keynesian, and neo-classical paradigms. Second, the enquiry logic underpinning them is fundamentally partial. These studies highlight a tendency for economic explanations to explain what they can in economic terms such as investment, and then to attribute any remaining discrepancies to an unexplained set of "residual differences". Third, quantitative evaluations of the relation between education or training and economic growth are controversial and imprecise, with researchers still at a loss to account for the real dynamics of economic growth, and the spectre of an uncomfortably large unexplained residual persists. Fourth, conclusions from evaluations of programmes that try to link education to economic outcome are indecisive. And finally, the methodologies behind these confident assertions of deficiency and remedy suggest an uncertain science of weak and highly mediated correlation between factors which do not necessarily make much sense as separate variables and whose national "cases" are neither comparable nor independent of each other.

However, it seems that formal and informal education and training as preparation for jobs in both the modern and the traditional sectors of national economies are indeed necessary for the development of human resources. Any cost-benefit analysis of educational returns must incorporate the interactions between education and the economy. There is a tendency to pay particular attention to education as an investment, the importance of rural education in a developing economy, and the interde-

pendence of education, human resource requirements and development. As far as research has indicated, individuals commonly view their education as a consumption good, but from the standpoint of the economy it is more appropriately seen as an investment good. This is because for economists, human beings can be conceptualised as human capital or embodied savings.

The several purposes of education have, therefore, received varying emphases over time. Both as a consequence and a cause of the development of human capital theory, the weight given to the economic dimension of education has grown. Education has widely come to be seen as an aid to the achievement of individuals' economic ambitions and/or national economic and social objectives as determined by the state. This has been the case in educational debates in both developing countries and in those developed countries where large numbers of young people are unemployed.

Education and (Un)Employment

Making education relevant to the world of work in both schools and out-of-school schemes (training programmes) is one of the crucial issues for official bodies in most societies. The volume of funds invested in education and the range of studies undertaken, in both state and private organisations, with the aim of improving the quality of education show that education has a key role in directing social development towards desired goals. In youth preparation for employment in particular, education has been recognised as an effective factor. In the context of attempts to reduce youth unemployment caused by a lack of required skills, making education more relevant to economic needs is similarly essential and has been a strongly pursued policy objective. Thus, if it is asked why education should be made more responsive to the economy and more closely related to occupations and employment requirements, there seem to be two main answers: because doing so reduces youth unemployment and increases the economic benefits reaped by both individuals and society (Dore & Oxenham, 1984; UNESCO, 1991; Kivinen, Silvennoinen & Puustelli, 1999). However, as regards developing countries, the link between education and available jobs is neither straightforward nor unproblematic. The availability of jobs depends on the structure of the economy and its developmental stage. The economic structure of a country can, for example, lack a high-tech profession

and the services it offers. Nevertheless, irrespective of national economic structures education is almost invariably able to furnish people with resources for a better life.

Unemployment amongst educated people will appear in different forms and at different stages of their lives. As Dore and Oxenham (1984) have pointed out, "in the early years of the school system unemployment appeared among primary school graduates – those with between five and seven years of schooling. Later it includes those with junior secondary, or eight or nine years of education. Then it began to affect secondary school-leavers and eventually even university graduates." (P. 5.) Two additional phenomena frequently aggravate the frustration over the situation. First, in many countries natural resources and other sources of productive livelihoods lie unused at the same time as many educated people are without work. The problem is more evident in developing than in industrialised countries.

Studies conducted in 1982–1988 found youth unemployment rates ranging from between 8–9 per cent in Japan and Germany to about 14 per cent in the United Kingdom. The figure for Iran is above 20 per cent. Secondly, in a number of countries educated unemployment coexists with acute shortages of skilled manpower with the result that immigrants have to be imported to do critical jobs even while local people are jobless. A consequential and natural feeling is that there might be something wrong with education. If only it could be put right, unemployment of the educated might cease to exist as a serious problem and productive opportunities would be better utilised – and the risk of political disturbance would be reduced (Dore & Oxenham, 1984; Jackson, 1985; Brown & Ashton, 1987; Hart, 1988; Ministry of Education of Iran, 1996).

In response to this situation in Britain, the then Prime Minister James Callaghan's speech at Ruskin College in 1976 questioned both the goals and the process of modern English education and, in particular, criticised the poor relationship between schools and industry. Briefly, he challenged the very function of education by spelling out the point that schools were unable to provide the necessary skills; he asserted:

> I am concerned to find complaints from industry that new recruits from the schools sometimes do not have the basic tools to do the job ... There is no virtue in producing socially well adjusted members of society who are unemployed because they do not have the skills. (Reported in *The Times*, 18 September 76).

These statements articulated the very important issues brought up in his speech which have, since that time, had a great influence on debates concerning education in the UK. The first major issue was that one of the key causes of the rise in unemployment is the shortage of relevant and required skills. Callaghan concluded with a balanced equation which indicates the relationship between education and unemployment. Indeed, he believed that education as an instrument should provide ”relevant and necessary skills” that served to reduce unemployment. The other implication, which has strongly affected the development of British pre-vocational education, was that there was a range of ”relevant” or ”necessary” skills which would make students more employable. In Callaghan’s words, education must provide the ”basic tools to do the job” (Wellington, 1989).

The impact of unemployment on education can be divided into four stages:

- The promise implicit in schooling (”Work hard at school so you will get a job after it.”) is undermined.
- The direction and traditional function of schooling and education are called into question.
- Education, training and pre-vocational education are increasingly seen as an instrument for responding to youth unemployment.
- The bonds between education and employment are tightened. (Wellington, 1989, p. 3.)

In this context, the activities implemented in countries such as South Korea and Singapore in Asia and Finland in Europe to improve youth employment have been highly effective in helping:

- to achieve the provision of learning experience at workplace for out-of-school young people and to facilitate the movement from work into education and vice versa;
- the promotion of educational forms, methods and structures which incorporate work skills in general education, in order to equip education for the world of work; and
- the furthering of national efforts for introducing work as an integral part of general education and the inculcation of employable skills in school leavers to respond to changing needs of technological development (UNESCO, 1991, p. 29).

In Finland, a workplace learning scheme, the Bridge From Vocational Education to Work project (the Bridge experiment), was a part of a quantitative and qualitative

reform of upper-secondary-level vocational qualifications implemented in 1999–2004 (Lasonen, 2004). Two-year study programmes, which constituted roughly a third of all vocational programmes, were extended to three years. Today, all upper secondary and tertiary-level vocational qualifications include an at least six months' workplace learning period to be done at enterprises or other appropriate places of work. The workplace learning reform was intended to improve the accountability of vocational education and training and promote lifelong learning by narrowing the gap between formal and informal education.

Full Employment and Economic Expansion

It is those who have failed to complete upper secondary education or otherwise acquire suitable vocational qualifications who are probably most at risk of becoming unemployed. Although higher levels of educational attainment are generally associated with lower levels of unemployment, this relationship is most widely observed with regard to lower levels of attainment. Moreover, the evidence reported by the OECD (1994; 2004) from a number of countries also suggests that the relationship between low attainment and higher unemployment rates is becoming stronger over time, with the least educated suffering more now than thirty years ago.

The anticipated relationship between educational attainment and unemployment is ambiguous. On the one hand, higher levels of attainment are likely to enhance a person's position in the job queue. On the other hand, the skills and competencies of highly qualified people may be too specialised to be readily transferable; people with high qualifications may also hold out longer in expectation of better-paid jobs. Thus, the balance between these factors may determine the nature of the relationship between education and unemployment in any economic system.

A shortage of qualified workforces in at least some economic sectors exists in all countries, without exception. This is not to be wondered at: technology is constantly advancing, creating sudden new requirements which, even if all the appropriate measures were adopted, would take some years to meet. However, according to Carnoy (1977), it can be assumed that there is a connection between the various causes of unemployment, and inefficiency in public investment is a principal determinant of educational unemployment or underemployment. On the basis of this assumption, he argues that the school system can be blamed for promoting unemployment in the following ways:

- hastening the movement from countryside to the city by providing the rural population with a general education which is useless for increasing agricultural production but raises expectations concerning work and income which cannot be met in rural areas;
- overschooling people relative to the jobs they can get so that they, effectively, stay out of the labour force for long periods of time rather than accepting work beneath their expectations; and
- misschooling people so that they cannot find jobs related to their school-learnt skills (Carnoy, 1977, p. 22–23).

Therefore, educational policy makers may contribute to a reduction of educated unemployment by (a) creating lower-cost education suitable for a great number of low-level jobs in the economy (rural jobs in particular), thus reducing or changing the expectations of school leavers; (b) reducing the number of qualified people emerging from educational institutions; and (c) bringing about, through planning, a better match between the higher-level skills needed in the economy and those taught in schools (Emmerij, 1972; Blaug, 1973).

Youth Employment

Although "the rise in youth unemployment means that many young people are losing skills or employability" (OECD, 1994, p. 41), the causes of unemployment among the young are multi-faceted and complex. Bynner (1996) pays attention to individual factors generating unemployment and stresses the importance of basic and work-related skills for occupational trajectories. In his view, education contributes not only to the human capital of an individual but, even more crucially, provides a society full of risk with a skilled individual. The role that education and training has in preventing unemployment is more that of a protector of young people than that of a guarantor of entry to working life (De Goede et al., 1996).

Drawing on comparative data collected on young people's transition to employment in England and Germany, Bynner and Roberts (1990) develop an argument that education both serves labour-market needs in enabling employers to select people for jobs, and contributes to its transformation through the skills brought into employment and the demands that the newly educated place on the products of industry. These functions depend fundamentally on the acquisition of the basic skills of literacy and numeracy, the absence of which is likely to jeopardise prospects of employment in industrial societies. It may be that education and training alone

cannot safeguard individuals against unemployment either at the macro or micro level, but the findings of research suggest that in the world of modern employment, where occupational careers are increasingly characterised by generically transferable skills and re-learning at regular intervals, they equip individuals with the critical elements required for survival and advance under hostile and changeable economic conditions. The effects of education and training are manifested in different ways across different societies, different labour markets and different regions. Logically, adequate education is not only a sufficient but also a necessary condition for getting and holding down a job.

Naturally, almost all countries with a high rate of youth unemployment have special employment policies for jobless young people, intended to reduce the unemployment rate and prevent the substantial economic and personal loss resulting from unemployment (De Goede et al., 1996). If unemployment implies considerable economic, social and individual waste (Alexander, 1996), then one of the claims frequently made may be that the problems of youth unemployment are in large measure a reflection of faults in the educational system. Schools are often blamed for no longer teaching what are called the basic skills and for a failure on the part of the educational system to prepare young people adequately for the world of work. Some of the lower quality of young labour and its higher unemployment rate has been attributable to inappropriate education. This problem has been ameliorated by raising labour quality through improved education and vocational training.

Recent studies add, in a number of ways, to our understanding of the role played by education and training in combating unemployment. They have foregrounded skills deficiencies as one of the mediators of labour-market difficulties, initially as a source of problems during transition from school to work, and subsequently as a constraint that restricts job entrants to a limited range of insecure, often unskilled employment. The effects of inadequate education and training are, naturally, exacerbated on weak and declining local labour markets, but we may expect them to be felt everywhere. Although having basic skills may not prevent unemployment, the data presented here lend support to the proposition advanced at the beginning of the argument that supplying young people with these and work-related skills provides a degree of protection against it (Shackleton et al., 1995; Bynner, 1996; OECD, 2004).

What role can an education and training system have in fighting youth unemployment? The message that comes from these data is that in situations of ever-

growing economic uncertainty, an ever-increasing premium may be placed on human capital as embodied in general and vocational education. It may offer the foundations on which the skills necessary for modern employment can most effectively be built, giving employers the kind of workforce they are increasingly seeking and offering individuals a degree of security. Reducing investment in education may, therefore, put in jeopardy the acquisition of the core skills which lie at the heart of the modern economy and which are perhaps the best protection against its risks (Bynner, 1996; Woodhall, 1997). At the level of pedagogy, current research suggests that the environments for learning core skills must be reassessed from the perspective of the needs of diverse learners. Given growing student numbers and the different learning styles of individual students, traditional teacher-centred instruction in the classroom represents a narrow and one-sided learning environment. Wenger (1998) among others emphasises the contextual and social aspects of learning environments.

Demand for Skills

However, developments in the industrial structure of the economy are a key determinant of the shifting pattern of demand for skills. These changes are the result of many interacting influences, highlighted before by Wilson (1995). The fluctuating pattern of employment in the developed countries has important implications also for other aspects of employment structure, notably the rising proportion of female participation in the workforce, the increasing incidence of part-time work, and the continuing growth in self-employment. Besides issues such as employment growth there are, naturally, some important points which need to be addressed. Considerations such as maintaining the existing stock of skills are also important. As Wilson (1995) has emphasised, analysing employment structures has important implications for the scale and nature of education and training provision. These key questions can be summarised as "recovery from economic decline; medium and long-term shifts in labour requirements; maintenance of the existing stock of skills; links between education and training and economic performance; equity versus efficiency" (Metcalf, 1995, p. 26).

One of the most important matters that makers of educational policy must attend to is identifying education of the sort which can be made to fit the economy efficiently: vocational education and liberal (general) education. Employers want

employees who understand the business or industry where they are doing their job, who understand the economy in which they work and live, who have a foundation for continued learning and personal development, who have a grasp of the basic academic skills, who understand and are able to collaborate with other people, and who are capable of thinking critically. In other words, much of what employers call for on today's labour market is rooted in liberal education and in broad technology concepts as opposed to specific, hands-on job training. However, today the emphasis on learning-by-doing and contextual learning has questioned schools as learning environments.

Because of these challenges and considerations, therefore, it is necessary to take a look at the concept of liberal education and how research highlights it as a factor in the interplay between education and the new demands of the economy. The next chapter offers a more detailed analysis of liberal education.

CHAPTER TWO

2 Liberal (General) Education as a Means of Youth Preparation for Employment

Introduction: Concepts and Definitions

General education is an initial and prior part of liberal education that usually starts in the second phase of secondary education with a curriculum shared by all students. It provides broad exposure to several disciplines and forms the basis for developing important intellectual and civic capacities. Further, liberal education is considered a philosophy of education that empowers individuals, frees the mind from ignorance, and fosters social responsibility. Characterised by challenging encounters with important issues and distinguished more by a way of studying than by any specific content, liberal education can take place in any type of higher education establishment. These definitions of general and liberal education (the arts) are problematic and multifaceted and often used interchangeably, as we have done in this chapter.

There are various conceptions of what might constitute a general education, with liberal education the predominant candidate. The concept of liberal education has evolved over centuries and, in the process, provoked debate. Today, any comments that include the term "liberal education" often require additional explanation. The most common association of "liberal" is with political and social ideologies, yet what the tradition of liberal learning really conserves involves both an intellectual heritage and a way of understanding the world and ourselves (Grugel, 1995). Indeed, embodied in the tradition of liberal education are those very crucial elements of true learning for which there is most demand. Now more than ever before, learning has become a lifelong process as an indispensable means of retain-

ing one's value in contemporary economy and remaining equipped to deal with increasingly rapid and frequent changes (Pring, 1995).

The word liberal education comes from the Latin verb *liberare* – to liberate. Thus, a liberal education is a *liberating* education which frees and strengthens the mind. Liberal education refers to the arts of the mind as opposed to the mechanical arts, those of the hands. The term "liberal" is often employed to denote a different approach to education. It refers to a distinct educational philosophy which traditionally values knowledge for its own sake and requires a particular educational methodology, particular educational materials and a particular system for delivering education. Liberal education is education in culture or for culture. The finished product of a liberal education is a cultured human being (Strauss, 1967). In the past, when the value of a liberal education was based on the ultimate goal of nurturing an enlightened populace, and consequently of creating well-ordered societies, the tools and technologies of learning, including texts, books, numbers and writing, were all absorbed thoroughly to become a natural adjunct of education. In the last two decades, the introduction of new technologies, especially computers and the Internet, has raised many questions as to how the traditions of liberal education should be redefined in the twenty-first century. Technology and its rapid integration into all aspects of human life will redefine words such as "freedom," "truth," "intelligence," "fact," "wisdom," "knowledge," "history," and "memory" (Turkle, 2004). Though liberal education has assumed many forms across different times and places, it has always been concerned with important educational aims such as cultivating intellectual and ethical judgment, helping students make sense of and negotiate their relationship with the larger world, and preparing graduates for lives of civic responsibility and leadership (Levinson, 1999; Schneider, 2004).

According to Lemann (2004), liberal education is best understood in its most literal sense. It is education that liberates, that frees the mind from the constraints of a particular moment and set of circumstances, that permits one to see possibilities that are not immediately apparent, to understand things in a larger context, to think about situations conceptually and analytically, to draw upon a base of master knowledge when faced with specific situations. Optimistically and even by being evidently impractical, liberal education equips a student for life far more richly and completely, and across a far wider expanse of time and space, than does education whose sole aim is to be useful. Although the initial objective of this particular educational tradition, like that of other types of schooling such as vocational educa-

tion, is the preparation of young people for their adulthood, sometimes it is viewed as pursuing an opposite goal. At the same time, these distinct educational traditions can be described also in an integrative, complementary, inclusive and mutually supportive manner. In fact, they are different parts of a single picture, and as Dewey (1916) has pointed out, vocational education should seek to bring about a more equitable and enlightened social order. Additionally, the recent rapid technological revolution and transformations of and changes in the structure and configuration of employment opportunities have highlighted the need for new types of skill, qualification and ability (for intellectually better qualified people), and most of these can be delivered through liberal education (Trant et al., 1999). This urges us to recapture and redefine the concept of liberal education in a way that enables it not only to fulfil individual desires but also to address the social, cultural, and economic needs of society.

In order to clarify the concept of liberal education, Nicholas (1983) discussed the following styles of epistemology, each with its own characteristics and approaches to the nature of society, humanity and knowledge. They are seen as critical elements in analyses of education and its development.

Liberal pragmatism. John Dewey's idea of education is at the centre of this theory. Pragmatism emphasises that learning should be directly related to the interests and concerns associated with pupils' own future lives as workers and citizens. Moreover, these two aspects of education, practical and theoretical knowledge, cannot be separated (Dewey, 1916; Nicholas, 1983). According to pragmatism, preparation for work should be the task of schools, which should make appropriate use of tools and practical techniques as an essential part of their curriculum, while a practical approach should be emphasised in the teaching of all subjects (Lauglo & Lillis, 1988). The nature of the work done should foster individuals' growth and especially their critical abilities. Amongst other conceptions of a general education linked to the world of work are Marxist and populist theories.

Marxism-Leninism. Socialists emphasised those types of curricula which were dominated by practically based subjects: this has been known as polytechnic education. Lauglo and Lillis (1988) recognised that there has been some overlap between pragmatism and polytechnic education in that both reject a division of subjects into theory and practice or pure and applied topics and the notion that theory and pure knowledge are always superior to and of a higher status than practice and applied knowledge. These two styles of epistemology saw the curriculum as a synthesis of

both aspects of knowledge. In socialist societies, students were expected to participate in authentic productive work outside the classroom to enable them to learn from workers and farmers and to bring educational institutions closer to productive work and the community. While this approach emphasised the value of experience and activity, the collapse of the Soviet Union has led to many economic, social and even educational changes in the ex-Communist countries in both theory and practice.

Populism. The term "populism" has been used to describe widely different social movements and intellectual traditions (Lauglo & Lillis, 1988). Originally, populism was a movement that celebrated the culture and common sense of ordinary rural people and their rights. It is known as a movement against dominant urban elites and represents a reaction to industrialism and centralised development strategies led from cities. Physical productive work was seen as educational in the sense of fostering valued personal qualities, while formal schooling was considered to take children away from their cultural background and from the real-life situations in which their desired personalities are formed. Further, populists believed that secondary schools should be prepared to meet the needs of students who would eventually leave schools and return to their communities (see Nyerere, 1967).

According to Niiniluoto (1992), as encapsulated by Terentius Varro (1st century BC), the core of what were, in the educational system of the Middle Ages, known as general studies, was to consist of the scheme of the *artes liberales*, liberal arts: grammar, dialectic, rhetoric (making up the *trivium*) and geometry, arithmetic, astronomy and music (making up the *quadrivium*). As heirs to the medieval faculties of arts, today's faculties of arts and sciences or faculties of liberal arts are still producing masters of arts.

The Importance of Liberal Education

As we stressed in Chapter One, we are moving from an industrial society to an information and knowledge-based one. The elements making up this post-industrial era are internationalisation, globalisation, technological advancements, and dramatic information growth. Together they have led to profound changes that are still underway in the structures, forms and configuration of the working life. Therefore, employers are looking for employees with strong foundation skills on which

to build their own in-house training and on which employees can build their own lifelong learning, whether directly linked to employers' training provision or not. Education and training provides students with the key skills and qualifications that are required for employment in the twenty-first century.

In their book *Learning in Adulthood* (1999) Merriam and Caffarella, quoting other authors, anticipate the following dramatic changes emerging in the world of work and opening a new direction for liberal education:

- The US alone will create ten thousand new jobs a day, every day, for the next ten years, and many of these jobs will be in careers that have yet to be invented.

- It has been estimated that the amount of information in the world doubles every seven years, and some researchers have predicted that its volume will soon double every 20 months.

- Others have speculated that half of what most professionals know when they finish their formal training will be outdated in less than five years, perhaps even in months among those in technology-related careers.

- One strategy for dealing with information and technology overload is for educators to focus on developing students' higher-level thinking skills so as to enable them to judge the credibility and usefulness of the information available to them.

- Under globalisation, companies must add new and important ingredients to the mix when devising strategies: volatile political situations, contentious global trade issues, fluctuating exchange rates, and unfamiliar cultures. In short, globalisation requires that organisations enhance their ability to learn and collaborate and manage diversity, complexity and ambiguity.

It should be clear from these statements that training for one particular job may not be a safe strategy for the twenty-first century. By contrast, developing key skills, particularly higher-level thinking skills and intercultural understanding, on which enterprises' in-house training can be grounded, is a strategy for success.

Hersh (1997) confirms that key skills derived from liberal education are what twenty-first century employers are looking for as they hire new workers. He surveyed hundreds of CEOs and human resource managers and found that they are interested in the following three skill clusters:

- cognitive skills, including problem–solving skills, critical thinking, and learning to learn skills together with an ability to see things in a new light and make sense of ideas in old and new contexts;

- presentation skills, an ability to express oneself orally and in writing in a coherent, clear, persuasive and articulate manner;

- social skills, enhancing one's ability to work with other people co-operatively in a variety of settings, which can be fostered through and enriched by intercultural understanding, international experience, and foreign language skills.

It is evident, however, that the rapid growth of information and the need for immediate change driven by global competition will force employers to seek their future employees among the most skilled and best qualified young people. Moreover, the most important skill that a twenty-first-century worker needs (no matter what their field) is knowing how to learn and be open to learning new things. Liberal arts students wishing to find employment, however, are required to learn things also outside their comfort zones, for example by taking science, mathematics, and foreign language courses. These experiences give them the learning to learn tools that are in great demand in the workforce of today. Table 2.1 summarises pedagogies of engagement and student learning goals associated with liberal education as a platform for reforming educational objectives and content and instructional models.

Grugel (1995) points out that it is possible to argue that liberal education enables learners to acquire lifelong learning skills: techniques of analysis, a willingness to suspend judgement for a time and to update qualifications, and an ability to modify one's conclusions as additional information arrives. Associated as they may be with a liberal education, these are also the qualities of mind linked with success on the marketplace. Moreover, they are those essential abilities and skills which companies and employers are after in their future workforce. Liberal education frees the learner from narrow thinking to recognise connections among many ideas. Fur-

Table 2.1 *Pedagogies of Engagement and Student Learning Goals: A Guide to Contemporary Reforms* (See Schneider, 2004, pp. 6–11.)

Inquiry skills and intellectual judgment across the curriculum	• *Student learning outcomes:* learning goals articulated across the entire curriculum, guiding the liberal arts and science disciplines and professional studies alike
	• *First-year experiences:* first-year programmes and seminars that help students learn what is expected of them educationally and work proactively to develop better skills in analysis, research and communication, including information literacy
	• *Skill-intensive content courses:* schemes for practising important skills recurrently across the curriculum in courses explicitly designed to emphasise intensive writing, technology, quantitative reasoning, second-language skills, and, in some cases, ethical reasoning
	• *Undergraduate research:* involving students in inquiry and hands-on research
Social responsibility and civic engagement	• *Big questions:* imaginative ways of teaching the arts and sciences that connect the content of these courses to important questions in the larger world
	• *Work-based learning:* a new emphasis on internships, service learning and other forms of practice that help students link their academic learning with real-life experience
	• *Diversity, global and civic engagement:* a wealth of programmes, both curricular and extra-curricular, intended to foster civic engagement, diversity and global learning, and social responsibility
	• *Community-based research:* a growing emphasis on community-based research, often done collaboratively
Integrative and culminating studies	• *Liberal/professional links:* new connections between liberal and professional education
	• *Learning communities:* thematically linked courses in different disciplines that students take as a set with the expectation that they will examine important human, scientific or societal questions from multiple points of view
	• *Advanced interdisciplinary general education:* courses that invite comparison and connection
	• *Portfolios and e-portfolios:* documenting and assessing students' intellectual progress over time
	• *Capstones:* capstone courses and/or experiences that help students integrate their learning both in their major field and in general education areas
	• *Culminating projects and assessments:* required for completion of a degree, assessed for important student learning outcomes

ther, the ethical is made a part of any consideration of the immediately practical (Bailey, 1986; Grugel, 1995).

In the twenty-first century, two features of modern economies make such skills of even greater value just now. The first feature is job mobility, though not in the traditional sense of upward mobility. White-collar employees in the private sector find themselves moving less often up a hierarchy, more often across it. The flow is horizontal among jobs, around divisions, between companies. The second distinctive feature of the new corporate terrain are enlarged job responsibilities. These have broadened as a direct corollary of company decentralisation. Thus, it seems that the workforce of the future will need as broad a range of intellectual skills and understanding as they can possibly summon.

Liberal learning helps develop decision-making and other skills that are needed for good planning and that improves imagination in ways that foster intuition and creativity. Liberal study is also widely valued as a means of promoting skills in clear, persuasive communication (Zwerling, 1992; Lamson, 1995). Social and political pressures have led to efforts, since the period of educational expansion in the 1960s, to offer students a high level of both general and vocational education, allowing them to postpone their choice of an educational pathway as long as possible so as to ensure the best possible preparation for a highly technological and democratic society (Husén, 1989).

Prospective company employees are likely to have benefited from liberal education in one way or another as regards both their individual desires and needs and the requirements of collaboration. Pring (1995) argues that when combined with technical and professional skills, a foundation of liberal learning can serve as a kind of high-octane platform, especially for those entering business firms that are internationalising and restructuring. Senior managers in companies in the United States often insist that employees' long-term mobility is also important. However, the fact remains that without a definable set of job-related skills, or at least a general familiarity with business culture and company practices, it can be difficult to get started. Useem (1995) has recommended that such a foundation of liberal education be complemented with a professional foundation, adding that economic globalisation and restructuring are changing the nature of work. The resulting turbulence and call for flexibility are probably enhancing the premium placed on liberal learning combined with professional learning.

Despite having been developed through a process of learning based on the liberal arts, the "portable skills" thus generated – persistence, communication skills, critical thinking, negotiation skills, problem-solving skills – seem to enhance individuals' ability to operate in any of their roles and have particular applicability at the workplace (Zwerling, 1992). At the same time it is probably important to encourage education of a kind that enables people to progress and become more vocationally flexible so that they can successfully cope with the inevitable shifts in the structure of the economy.

A conclusion that can be drawn from the above discussion is that education and training systems seem to play a positive part in economic development and youth employment. Such a positive effect can be achieved by focusing on education and training of a kind that is required by companies and employers; by emphasising policies which are responsive to economic changes and also by paying particular attention to making educational objectives, approaches, materials and learning processes more flexible. Education can be assumed to be an important factor in employment. It possibly reduces youth employment by preparing people for jobs through the provision of necessary and relevant skills and competencies.

However, economic progress is a complex phenomenon affected by several types of uncertainty. Although the evidence cited above has suggested that education promotes employment, there are some cases where educational systems have themselves caused problems. Thus, we should keep in mind that schools will increase school-leaver unemployment rates if they deliver an education that is unrelated to highly changeable economic needs and job requirements. In the developing countries we have the cautionary experiences of India and Pakistan, which in the 1970s expanded their educational system without taking account of their economic structures, resulting in high unemployment amongst educated people. Moreover, according to Wilson (1995), educational and training policy may not necessarily operate in a purely passive fashion, responding to the perceived requirements of the labour market. Additionally, it will be concluded that the relationships between education and employment are diverse and that these relationships cannot all be geared to specific purposes of the kind we have been discussing, for example to fostering economic productivity (Hinchcliffe, 1987). Moreover, there are other factors such as technological, social and demographic changes, economic and political problems and so on which also affect youth employment.

In this study and the research reviewed in it, however, the stress is on the educational characteristics of individuals and on the role of the educational system in offering an attractive, appropriate, and applicable way of preparing young people for the world of work. Hence, many studies have stressed that strengthening general education at the primary and lower secondary levels is the first priority to be addressed by public policies intended to improve the productivity and flexibility of the workforce. In addition to generating broad societal benefits, liberal education seems to increase worker mobility and productivity.

The Implications of Liberal Education for the Economy

Liberal education has always had its full share of theorists, believers, and detractors, both inside and outside academia. The best of these have been responsible for the evolutionary development of the concept of liberal education, for its changing tradition, and for the resultant adaptation of educational institutions to serve the needs of society (Farnham & Yarmolinsky, 1996). In a knowledge-based economy, knowledge and skills fuel the economy and have become key determinants of both professional creativity and economic opportunity. Indeed, in the middle of a rapidly changing world, it is essential to ask how educational institutions can best train students to be responsive to change. More than ever before, those completing upper secondary and tertiary education programmes need the critical thinking skills and ethical commitment that are necessary for both economic development and world citizenship. In the view of many commentators, educational institutions can meet this need through liberal education. However, to persuade also the policy makers of this era of competing demands for scarce resources and financial and moral triage, it is relevant to emphasise that liberal education also helps educational institutions to prepare young people for the workplace and thereby to contribute to the economy.

Many policy makers may become aware of the importance of the education and training system if they are made to understand how it helps young people to enter working life, whether through technical and vocational or general and liberal education. In this regard, as we have already stressed, the makers of educational policy, educationalists and teachers must not only understand that an integrated labour market must have workforces with core skills in core subjects (such as mathematics,

science, the humanities, languages, and geography) but also realise that the creation of a reorganised training system in which technical and vocational education has been revised and reformed is quite important, and worthy of being given resources. Hence, many countries are taking a new look at their educational institutions in the light of dramatic international change in which these countries have lost their well-being and economic advantage. Although educational systems need to re-examine their policies as regards the preparation of youth to meet the requirements of the economy, it should be pointed out that the overriding goal of education is not, primarily, to train students to be economically productive. At the same time, a liberal education properly organised is, besides pursuing other important goals, capable of performing this crucial task.

The many arguments for liberal education include two basic views: liberal education as an end in itself and liberal education as a means to an end. The following discussion is based on the assumption that liberal education is worthy of in-depth studies quite apart from any relationship it may have with other disciplines. Still, liberal education could be fostered by focusing, at times, on how it assists young people to contribute to the economy in both liberal and other fields.

Liberal education also qualifies people for general careers, and for careers that draw upon the skills and knowledge acquired through education of this sort. We recognise that even non-professional engagement in liberal education improves the quality of many people's lives and that this, in turn, appears to improve their productivity in the workplace. Moreover, for many students the pleasure and success experienced in some form of liberal education is catalytic and synergistic, giving them the confidence to venture into other subjects. Many professionals, business people, and educators have believed that such an education leads students to acquire transferable and flexible skills in coping with many jobs outside schools. For many people, it may take a leap of imagination to grasp the positive connection between general and liberal education on the one hand and the world of work on the other. Some parents are wary of general and liberal education courses, believing that they will divert their children's attention and resources away from subjects that prepare them for high-paying jobs. As mentioned earlier, within the world of liberal education one camp considers education of this kind an end in itself while another views it as a means to other ends, such as enhancing learning achievement and work performance.

At its best, liberal education promotes self-expression, creativity, and intuitive and sensory-oriented learning. In addition, it fosters both discipline and cognitive, psychomotor and emotional development. It also contributes to national teaching and learning goals by, for example, improving the upper secondary school completion rate, promoting student achievement in challenging subject matter, and developing a disciplined environment. For instance, a nation's competitiveness in the world economy depends on problem-solving skills, willingness to take risks, higher-order thinking skills, teamwork and creativity (Levinson, 1999).

The question is whether schools can develop a sophisticated relationship with occupations. Education should be a creator and upholder of standards of professional conduct that may seem unrealistic to practitioners who are caught up in the pressures of daily work out in the field. Education should inculcate students with an ethos that does not always make for a perfect fit with the quest for occupational success, while also, paradoxically, equipping them to become successful in their occupations. Education should use its special position of being protected from economic pressure to push outward the boundaries of what it is possible for an occupation to accomplish (Lemann, 2004).

By contrast, Marshall (2003) believes that students' overriding concern should be how to realise, as fully as possible, their basic human birthright, including their powers of imagination, aesthetic responsiveness, introspection, language skills, rationality, moral and ethical reasoning, physical capacities, and so on. He also points out that liberal education is a mechanism for developing human potential to the full. *In addition to pursuing* outstanding intellectual achievements it has ethical goals. Therefore, liberal education focuses not only on teaching students how to reflect on facts both analytically and evaluatively but also on the growth of individuals as moral agents.

It is evident that most of the occupational and technical training that people need for their work actually takes place on the job. As a result, many educators find valuing such training above *education* unacceptable. When we define liberal education primarily as involving a particular type of subject matter, this makes it quite a challenge to argue that students' learning materials are irrelevant and meaningless. However, when we expand this definition of liberal education to include practices such as analysis, integrative learning, or a persistent concern with the civic, ethical, or cross-cultural implications of any particular issue, it becomes transparently clear that these practices greatly enrich all our endeavours, including those in working

life. As Schneider (2004) suggests, this is not to say that liberal education should be defined exclusively in terms of capacities or practices. A liberal education should foster also a deep grasp of society, the self, culture, history and the natural world. A review of developments across the spectrum of educational reform yields three major themes as keys to a newly committed and practical liberal education for the twenty-first century. According to Schneider (2004), these themes are intellectual judgment, social responsibility, and integrative learning.

Inquiry and intellectual judgment. In order to promote the thoughtful and creative use of human reason and help today's diverse students develop strong analytical and communication skills, secondary and tertiary education establishments must design new curricula and new teaching strategies for both face-to-face and online instruction. Indeed, school curricula should get to grips with writing-in-the-disciplines programmes and other educational practices clearly intended to teach all students how to make sense of complexity, how to find and use evidence, and how to apply their knowledge to new problems and unscripted questions.

Social responsibility and civic engagement. As we have mentioned already, studying the arts and humanities must be the heart and soul of liberal learning. Therefore, educational institutions must turn their full attention to putting social and civic responsibility into the curriculum. Indeed, it is vital to provide students with real-world experience and abundant scope for addressing social problems in cooperation with other organisations and institutions. It is extremely important that this revival of civic engagement and social responsibility is offered in nearly every field that helps students evolve essential intercultural skills and a sophisticated sense of how to collaborate across boundaries in a diverse but still highly fractured and violent world. Mutual, collaborative, intercultural, and community-based learning is the new civic frontier for our twenty-first century world of diversity, conflict, and inescapable interdependence.

Integrative and culminating learning. Educational leaders are rapidly inventing new forms of integrative and culminating studies for their students. Ranging from first-year learning communities to senior-year interdisciplinary general education courses and capstone projects and popular field-based learning, such schemes offer today's students multifarious, structured opportunities to establish connections across disciplines and fields, to link theories with practice, and even to bring their own lived experience into the context of what they are learning in general education and in their major-subject studies. This commitment to integrative learning helps to

ensure that students will learn to take context and complexity into account when they apply their analytical skills to challenging problems. The new importance of integrative learning also holds the power to bridge, at last, the long-standing cultural divide which places one set of disciplines, the arts and sciences, in the domain of the intellectual but non-practical, while the occupational fields are viewed as a practical but, for that very reason, inherently illiberal domain. Analysis and application are starting to come together, where once they were presented as alternative educational pathways.

Failure of Liberal Education

The Boyer Commission (1998) noted that many students take their qualifications after having accumulated whatever is the requisite number of courses but while still lacking a coherent body of knowledge or any inkling as to how one sort of information might relate to other sorts. All too often they complete their studies without knowing how to think logically, write clearly, or speak coherently. Despite theoretical attempts to link education to the world of work, most countries seem to perceive a gap separating general education from vocational education and training which prevents individuals and institutions from responding flexibility to economic pressures for upskilling and reskilling and to changing social demands for education and training. According to a report by the OECD (2004; UNESCO, 2004), national-level discussions of strategies and policies designed to close this gap should, as far as possible, distinguish between the following aspects of the situation:

- *The opportunity gap.* This is the gap which exists with regard to career and income perspectives and related social and cultural advantages between those who go (successfully) through vocational education and training and those who go (successfully) through general and academic education.

- *The pedagogical and cognitive gap.* This is the gap between theoretical and applied learning and knowledge. The perception of this gap stems from an assumption that learning is suboptimal, both in vocational and in general education, if it is too exclusively based on either a practical or a theoretical approach. Another underlying assumption is that such learning leads to less

than satisfactory results in societies and economies where abstract reasoning acquires increasing importance alongside the technical and organisational application of knowledge.

- *The institutional gap*. This is the lack of institutional linkages and bridges between vocational and general education, preventing young people and adults from following pathways appropriate to their projects and abilities, and hindering them, in particular, from continuing, after vocational training, into higher levels of general, technical and/or academic education.

Almost everyone recognises that there is a crisis in societies' way of preparing young people for life. Some think the problem is primarily a matter of technical competence; and there is no doubt that at almost every level, our students know less about some crucial subjects (for example, mathematics) than will be required in working life, and a great deal less than is needed to maintain an advanced industrial economy. Before and while we are scientists, technicians, or business people, however, we are citizens and human beings. Moreover, our current approach to technical education originated in certain changes that occurred first in our thinking about liberal education - the education which equips us to cope with our responsibilities as humans. Further, in liberal education the problem is not primarily one of falling standards though, measured by the past, here as elsewhere standards have fallen dramatically or even ceased to exist. The predicament is more fundamental: we have grown uncertain about the very purpose of liberal education. We cannot solve our other educational problems until we recover a sense of liberal education as a substantive and attractive project (Foster, 2003).

According to Connor (1999), the greatest problem confronting liberal education is not a glut of school leavers and graduates possessing the qualities imparted by it but the difficulties involved in developing these qualities more fully at every level of the educational system. Liberal education faces several challenges, among which the issue of relevance is the most critical one. Indeed, this challenge is neither trivial nor limited to general education and the liberal arts in higher education institutions. As Armstrong (2001) notes, many new players are offering students an entirely new set of benefits: convenience, flexibility, a curriculum keenly focused on job-related skills, and a substantially lower cost structure.

Revitalising liberal education requires a strong national commitment from individual institutions, their governing boards, and all other key stakeholders. It calls for open and authentic dialogue regarding the purposes of liberal education and some agreement as to the qualities that should be possessed by liberally educated people. It will also require us to design curricula that give students every opportunity to attain the skills and attributes both of productive citizens and of successful individuals. It is likely that reasonable people of goodwill will differ on how this is to be done. The Association of American Colleges and Universities (2002) has suggested in its report, *Greater Expectations: A New Vision for Learning as a Nation Goes to College*, that liberal education will need to be refashioned in two major ways. First, it must define itself as the best and most practical form of learning for a changing world and strive to meet that standard. Second, it must become available to all students. The report has called for a new synthesis between liberal and practical education throughout the educational experience. It has also asserted that liberal education must become consciously, intentionally pragmatic while remaining conceptually rigorous; its success in pursuing this goal will be measured by how effectively those completing educational programmes are able to use their knowledge thoughtfully in the wider world.

General and Vocational Education in Some European Countries

In most European countries, general and vocational education, traditionally seen as representing knowledge and skill respectively, form separate tracks. In Europe, it is an educational policy and a strategic concern that students choosing vocational education should not suffer from a disparity of esteem stemming from income levels and social status lower and post-compulsory education opportunities more limited than those enjoyed by their peers who obtain a general education. However, the relative status of vocational and general/academic education, as measured by how they appeal to young people and their parents, vary across European educational systems. Table 2.2 shows the percentage of students in seconda-ry education enrolled, in 1995/96, in vocational and general education programmes respectively. The students covered here are aged between 14 and 19 depending on the country (Table 2.3). Austria, Hungary, Germany and the Netherlands have strong vocational education programmes which attract a large proportion of young people and

which qualify programme completers for higher education in the same way as academic programmes. However, the availability of flexible routes to higher education differs between countries. Austria and the Netherlands have created several progression paths from vocational tracks to tertiary studies, with Germany and Hungary in the process of following their example. Other countries such as Greece, Spain, England, Portugal and Estonia have less developed and weaker vocational education systems, which is also reflected in enrolments. At the individual level, inadequate training may lead to underemployment, unemployment or social exclusion.

Table 2.2 *Relative Proportions of Secondary Education Students in Vocational and General Programmes in European Countries in 1995/96* (%)

Country	Vocational programmes	General education programmes
Austria	81	19
Hungary	73	27
Germany	72	28
The Netherlands	70	30
Belgium	61	39
Norway	58	42
Denmark	57	43
France	54	46
Sweden	52	48
Finland	52	48
Greece	47	53
Spain	39	61
Great Britain	31	69
Portugal	29	71
Estonia	26	74
Ireland	25	75
EU-15	58	42

(European Commission, 1999).

Table 2.3 *Secondary Education Students' Typical Age and Length of Studies in European Countries*

Country	Vocational programmes		General education programmes	
	Age	Length of studies	Age	Length of studies
Austria	14–18	4 yrs	14/15–17/18/19	1–4 yrs
Belgium	14–18	4 yrs	14–18/19	4–5 yrs
Denmark	16–18/19	2–3 yrs	16–19	3 yrs
Finland	16–19	3 yrs	16–18/19	2–3 yrs
France	15–18	3 yrs	15–17/19	2–4 yrs
Germany	16–19	3 yrs	15/16–18/19	1–3 yrs
Great Britain	14–16/18	2–4 yrs	16–17/18	1–2 yrs
Greece	15–18	3 yrs	15–17/18	2–3 yrs
The Netherlands	15/16–17/18	2–4 yrs	15/16–17/18/21	2–6 yrs
Norway	16–19	3–4 yrs	16–19	3–4 yrs
Portugal	15–18	3 yrs	15–18	3 yrs
Spain	16–18	2 yrs	16–18	1–2 yrs
Sweden	16–19	3 yrs	16–19	3 yrs

(Eurydice, 1997.)

In many countries, general secondary education and liberal tertiary education have made themselves the preferred option amongst parents, students, teachers and policy makers. As a result, at the level of secondary education the number of students in this kind of schooling sometimes exceeds 90 per cent of all student enrolments, especially in the developing countries. This imbalance raises the question: How can education be made more relevant to the practical needs of the economy? There are a number of industrialised countries, such as Austria, Denmark, Germany, the Netherlands and Switzerland, where technical and vocational education and other forms of work-based learning have been made the national top priority and where, indeed, their provision is well-organised and the institutions delivering them are well-equipped. In Chapter Three we discuss work-related education from a British and Finnish perspective. In the UK, technical and vocational education and training is organised on a volunteer basis, whereas in Finland the delivery of TVET is an integrated and natural element of the overall educational structure and system.

CHAPTER THREE

Education for Work

Introduction: Concepts and Definitions

The theme of education for work and TVET, or the idea that education should have economic relevance and vocational purpose as well as concern for the personal development of the individual, has been around throughout the history of state education in all industrialised societies. Indeed, giving students an understanding of and preparing them for the world of work is an important aim of educational systems which needs analysis. A consequence of, if not an assumption underlying, this thinking is that education might serve society by providing it with labour and by making this labour more efficient.

The definition of "education for work" covers general education for working life (Watson, 1983); as a movement, it attempts to vocationalise secondary education and bridge the gap between education and working life through an emphasis on lifelong learning and suitable curriculum aims and contents and the appropriate organisation of schooling (Jamieson, 1994).

The debate concerning the relationship that ought to exist between the schooling system and work is not new, but it has become more intense during recent decades, when certain rapid changes in the world of work and employment have led toward changes also in the content of vocational education. Many societies have faced increasing unemployment among school leavers. Since the 1970s, the following circumstances have made it necessary to strengthen the links between learning in school and work practice so as to facilitate the transition from school to employment (Dror, 1991):

- The growth of unemployment among adults and youth has increased the need to provide adequate educational arrangements to help those in search of new employment possibilities.
- Numerous developing countries view work as a nation-building activity; therefore, training for high-technology work has become a part of both political ideology and educational practice.
- Economic requirements have meant that there is greater demand for educated women and people from minority groups to participate in the high-technology labour force of national production systems.
- The quest for self-fulfilment through work has intensified, and consequently schools are required to deal with the self-awareness of their pupils (pp. 796–800).

Although a curriculum preparing students for work covers courses included in general non-vocational school programmes, it focuses on knowledge and skills which are considered to help school leavers succeed in their occupational careers. Such a curriculum may help students also to achieve satisfaction and self-fulfilment at work when they have reached adulthood. There are four related questions which might show the researcher the way to identifying an appropriate educational paradigm among those available and picking out different models for organising the relationship between school and work:

- At what age should a curriculum for work preparation start?
- Where should it be delivered: in compulsory education, after upper secondary school, or at work?
- What kind of curriculum process (e.g. teaching and learning arrangements) is required?
- How should this educational process be assessed?

Briefly, this debate started seriously with a series of international conferences organised by UNESCO from the early 1970s onwards on the subject of work and, in particular, on careers education. The results of the conferences led to educational planning units being set up, usually within national ministries of education, or national commissions were appointed to address the fit between education and work or the prevention of educated unemployment (Psacharopoulos, 1991a). Other international institutions such as the OECD and national-level committees and bodies also became involved in reforming and developing national education systems. For example, in the United Kingdom Prime Minister Callaghan's speech in

Ruskin College was a beginning which led to a discussion between educators, employers, and researchers about vocationalism and a reform of education. In Britain, the Youth Opportunities Programme, the Technical & Vocational Education Initiative, Youth Training, and the National Council for Vocational Qualifications and also the Education Reform Act 1988 are outcomes of these debates (Watts, 1993).

In the face of persisting high levels of unemployment, young people will continue to seek out ways of securing a livelihood in keeping with their own priorities. It is a central task of educational policy to see to it that these endeavours are recognised and addressed in the schooling process. Some substantial issues that are a part of the argument as it affects the UK are as follows:

- Economic and social developments have brought about fundamental changes on the youth labour market, adding to the pressures for a comprehensive review of the orientation of secondary education.

- A growing proportion of secondary students can be involved in different forms of employment (part-time and domestic work). Whilst this is of considerable importance to the young people in question, it is almost completely ignored by their schools worldwide.

- The formulation of adequate policies and reforms has been hampered by confusion about the societal changes related to the intended outcomes of schooling, and by conflict between the interests and values of different groups participating in the political process. Many studies of the young, education and employment have contributed to a greater understanding of the relevant issues, yet selective terms of reference have prevented individual studies from attending to the full complexity and interconnections of the different policy dimensions.

- Although the effect of educational policy alone is limited, it is possible for schools to develop curricula which achieve the objectives of a general education whilst also recognising the priority which young people place on finding a livelihood, and the steps which they themselves take to achieve this goal.

Such curricula would be characterised by the following features: students' experience and concerns are taken seriously; students share in decision-making about educational objectives and content; the curriculum is delivered, where possible, outside the school, in authentic situations; it develops students' intellectual, technical and social skills and extends their knowledge to encompass the broader economic, political and technological milieu.

In this connection, a review of the literature on education for work identified some trends. Jamieson (1994) summarises them as follows:

- The emphasis has shifted away from preparation for work in school toward a concept of lifelong learning that is work-related.
- There is a realisation that both technical and social and interpersonal skills are required in the workplace and that these need to be readily transferable.
- The old dichotomies between liberal education and vocational education, and between education and training, are breaking down.
- Preparation for a life of work has implications for curriculum contents, pedagogy, and the organisation of schooling.
- Rapid technical and organisational changes in the world of work have profound implications for education.

In relation to the topic of education for work, the following factors are relevant subjects of research: (1) a changing labour market; (2) employers' expectations regarding the characteristics of future workforces; (3) skills for the future; (4) vocationalisation of secondary education (a work-related curriculum); (5) preparing students for future working life; and (6) the transition from school to work.

A closely related issue concerns the promotion of social equality through education and training. In Europe, different types of educational system offer different starting points for endeavours of this kind. A look at European history and the development of national educational systems reveals that some countries have been more inclusive and more active in their efforts to prevent youth unemployment than others. Secondary education systems can be characteri-sed in several ways on the basis of how successful they have been in their attempts to offer educational opportunities also to young people with talents and needs outside the academic mainstream.

Educational systems where vocational education and trai-ning has had high status and equal standing can be characterised as *occupationalist TVET cultures* (e.g. Austria, Denmark, Germany, the Czech Republic, the Netherlands, Hungary). There is also a strong relationship, in these systems, between education and the labour market, including a tracked system of educational provision and a qualification structure which has direct relevance to occupational entry. Such systems offer drop-outs a broad range of education and training opportunities, which may prevent exclusion.

In countries with highly school-based education and training provision (e.g. Finland, Norway and Sweden) voca-tional education has been integrated into an advanced comprehensive system of education representing an *educatio-nalist TVET culture*. Among the aims of this culture is achieving parity of esteem between general education and technical and vocational education and training and between students choosing a general education and a TVET pathway. Both vocational and general upper secondary education offer alternati-ve progression routes and prepare citizens for a more highly educated society. The relationship between the educational system and the labour market is quite loose, allowing for predominantly school-based education followed by vocational and subsequent corporate training. An advantage of the system are its relatively low drop-out and exclusion rates resulting from the fact that each young person has a place, even more than one place, within the schooling system.

Mixed educational systems (e.g. England and France) have been highly selective and di-visive. The function of upper secondary education has been to prepare students for tertiary studies and higher social positions. Vocational education has been a low-status track, and drop-out and exclusion rates have been high. Although the countries representing these systems have launched many development projects to improve their educational systems and raise the quality and status of TVET, there seems to be a stigma attached to the choice of this educational track.

A Changing Labour Market

A shift from Fordism to a Post-fordist era which has, in practice, kept industrialised nations on the alert from the 1980s onwards, anticipating a new wave of educational reforms intended to readapt the systems of education to the emerging economic

circumstances, has been an important trend for researchers. Thus, as Wilson and his colleagues (1987) predicted, there have been dramatic changes in the demand for different types of labour, including the emergence of previously unknown occupations. According an OECD study (1984), the aim of education and training systems is to produce skills and qualifications appropriate to the new labour market. The future of work, in the OECD view, will be accompanied by a growth in the service sector and new high-technology work processes.

Some researchers have pointed out that future employment growth seems likely to occur in the services and the installation, maintenance and repair of products, information processing, administration and other office work, and personal services (Karmel, 1985). These occupations are not clearly associated with any particular formal educational qualifications. They involve considerable interpersonal skills, and are likely to provide many opportunities for young people. In fact, the question of how we will equip our young for a future which is qualitatively different from that of their parents is the most important issue facing educators in the 1990s. It seems that new markets and technologies will require a more highly skilled, better educated and more mobile workforce in which professional and technical staff will have to be supported by workers trained to perform a range of tasks involving processes rather than repetitive assembly. Even in a time of high unemployment, skill shortages exist and firms wishing to exploit new economic opportunities must (or prefer to) change or upgrade the skills of their existing workforce (Skilbeck et al., 1994). More specifically, in Europe the current labour market trends point towards (Kairamo, 1989):

- a strong reduction in demand for low-skilled workers;
- universal use of modern information technologies;
- a new emphasis on transferable skills;
- a fall in the number of manufacturing jobs coupled with an increase in jobs related to design, maintenance and marketing: according to a recent study, less than 50 per cent of the labour force in manufacturing firms is presently employed in direct production, while R&D, design, work scheduling, marketing and distribution, and financing and administration account for more than 50 per cent of such employment;
- the emergence of an elite of industrial workers responsible for automated manufacturing equipment;
- new managerial skills to reduce lead times, organise teamwork and plan human and capital resources in a cost-effective way;

- increasing female activity rates as more and more women seek employment (p. 45).

Factors Influencing Change

Past shifts in industrial structure have arisen as a consequence of a number of interrelated factors which become visible when we compare the structure of industry under Fordism and post-Fordism. Wilson (1995) has highlighted some of them, which include:

- *Technical change*. As new technologies are introduced, this often has the effect of reducing employment since the same output can be produced by fewer people.

- *Specialisation*. As economies develop, there is a tendency for people and companies to specialise in particular tasks, which can result in substantial productivity gains due to increasing returns to scale and benefits from learning by doing.

- *Changing patterns of demand for goods and services*. As economies grow richer, there is a tendency to follow Engel's law of individual consumption patterns, that is, to spend a smaller proportion of income on necessities such as food and shelter and more on luxury items such as designer products or leisure and tourism.

- *Shifts in international competitiveness*. These may be linked with the items above but also depend on factors such as domestic inflation rates, international exchange rates, and the international framework for international trade (for example, membership of the European Union and the GATT agreements).

Post-Industrial Society

Some of the literature on education economic links uses terms such as post-industrial society, postmodernism, and post- or neo-Fordism to describe contemporary

developed society. A simple definition of the term post-industrial society refers to a situation where the number of jobs in the primary and manufacturing industries falls. For example, Bell (1973) describes a post-industrial society as characterised by the expansion of transport and public utilities; the mass consumption of goods; a decrease in the proportion of money used for food, with surplus money spent on household durables and luxuries; and the growth of personal services, restaurants, hotels, auto services, travel, entertainment and sport.

The most important issue raised by the emergence of the post-industrial society is the possibility of unemployment faced by the young. Cohen (1985) reminds schools that they have to take into account the fact that in a situation of structural unemployment and credential inflation, the links between educability and employability, on which so much of the teachers' authority rests, can no longer be made with any degree of assurance. In this connection, many authors argue the case for a number of "transferable skills" which can be used in a range of different occupations.

Thus, as Brown and Lauder (1995) observe, the creation of a postmodern economy must go with continued attention to structuring opportunity on the basis of individual effort and ability. Therefore, it seems that education must be organised on the premise that all rather than a few are capable of significant practical and academic achievements; of creative though and skill; and of taking responsibility for making informed judgements. In this context, the role of education could become one of looking for ways of meeting these new requirements, which call for value-added management techniques and a flexible, skilled and responsible workforce able to operate computer-integrated production systems (Mathews, 1989). This "high skills route" will lead to high-quality output which is the key to leading-edge economies such as Japan, Germany, and the Pacific Rim countries (Hodkinson & Issit, 1995).

Employers' Skills Expectations

Studying economic needs from the employers' perspective and taking into consideration what they think about the skills and abilities of their future employees is a crucial matter in curriculum development (Feuzat, 1978). As an important factor in making the curriculum and its structure more appropriate, we need to look at

employers' opinions on what should be done (Taghipoor-Zahir, 1990). A number of surveys conducted in different countries over the last few years have helped to illuminate employer expectations for school leavers. It is clearly a huge research task to identify employers' needs regarding the skills that school leavers and trainees should have (Wellington, 1986). So far in research conducted by Kurdistan University, local employers have been asked about the abilities and skills of their future employees. The informants focused on certain skills and abilities such as practical and work-related knowledge, creativity, hard work, adaptability, punctuality, and responsibility (Keiani & Azizi, 1991).

A Canadian study (Leroux & Laflear, 1995) recently grouped employability skills into three categories:

- academic competencies, which include communication skills, critical thinking, problem-solving skills and an awareness of the necessity of lifelong learning;

- personal management skills, such as the ability to set goals and take responsible action, self-esteem, initiative, and acceptable attitudes;

- teamwork skills, among them the ability to work with other people and respect them and the ability of lead and follow as appropriate.

In a research project in the UK which was concerned with the place of general studies in post-compulsory education, employers wished that these would be based on the aims of (a) broadening students' outlook, (b) improving their powers of communication and (c) enhancing their general knowledge (Pullen & Startup, 1985). Sultana (1990) points out that skills and qualifications are needed more and more, but that some employers find personal qualities important. According to Wellington (1986), these qualities are defined as interest, motivation, initiative, confidence, self-belief and maturity. A study in the US shows that employers want employees who have acquired capabilities such as learning to learn, problem-solving skills, creative thinking skills, self-esteem, goal-setting skills/motivation, personal and career development skills, interpersonal and negotiation skills, teamwork skills, organisational effectiveness, and leadership (Law & Pepple, 1990). As can be seen in Table 3.1, Cumming (1988) has prepared a classification of employer expectations, based on a number of studies carried out in Australia in 1978–1986.

Table 3.1 *Employer Expectations as Suggested by a Number of Studies in Australia 1978–1986* (Cumming, 1988.)

Attitudes	Attributes	Knowledge	Skills
• hard-working	• responsible	• about career options	• the three R's
• motivated	• reliable	• work-related (occupational)	• oral communication
• interested	• well-groomed	• work-related (general)	• job-seeking
• respects authority	• neat and tidy		• living
• loyal	• polite		• problem-solving
• co-operative	• punctual		• decision-making
• accepts direction	• adaptable		• knowledge discovery
• contributes to the economic system	• flexible		• negotiation
• obedient	• good character		
	• independent		

In Colorado, US in 1983 the Colorado Department of Education conducted in-depth interviews with employers, young entry-level employees and business personnel to obtain specific information about the skills needed in first jobs available to young people with high school education. A similar later study by the same department of education (1990) came up with the same list of skills highlighted by employers and personnel as required competencies for young people wishing to find jobs in their companies. McCoy and Reed (1991) again received similar answers when they asked employers about their future expectations for youth and schools.

Below we review similar lists of skills identified by different individuals and organisations representing different climates and societies as competencies necessary for employment. A great deal of doubt will be expressed about the validity of these studies and how they can be explained. The only fact that might account for the high degree of similarity between the listed requirements is the common nature of the economy in the developed societies. However, an important question remains: to what extent can data like these be applied to a country like Iran which differs from industrial societies in significant economic, political and cultural respects?

Employers' Perspectives on the Young

US employers' attitudes toward the young, the youth labour market, and prospects for a national system of youth apprenticeships were studied in 1994 through a survey of firms that had participated in local youth apprenticeship or co-operative education programmes in seven US cities and through focus group discussions with small and large employers in eight US communities. The studies established that the period between completing school and obtaining a good job is getting longer, the link between formal schooling and work is becoming more tenuous, and employers (especially small firms) are generally wary of any policy initiative designed to encourage the hiring and training of new workers. The then situation of labour surplus/job shortage made employers reluctant to initiate youth apprenticeship programmes. They generally felt that young people lack discipline, good work attitudes and communication skills and that schools do not prepare youth for employment. Screening was employers' dominant concern when thinking about participation in a youth apprenticeship programme. The researchers concluded that focusing national attention on the absence of good jobs for young people and emphasising flexibility when developing any policies were the keys to improving school-to-work transition (Robert, 1994).

These findings and conclusions should be interpreted against the background of the fact that American upper secondary education (ISCED 3, high school) has no TVET track. Instead, the optional vocational courses available train students in entry-level skills for possible transition to work after high school. The purpose of high school is to prepare students for college studies and careers rather than for entering to the world of work. As a general rule, companies train their own workers through work-based arrangements and human resource development. Consequently, US employers and the country's schools are not speaking about the same thing when they talk about building better links between the worlds of work and learning. Except through anecdotal evidence, most schools and colleges most likely know little about employers' perceptions of them, about the skill requirements set by employers, or about employers' training needs. On the other hand, employers, notably those with little direct experience of educational institutions, are unaware of the ways in which education can relate to the workplace.

It seems that in many large firms in the United States, modern employers invest considerable resources in developing their physical and human capital. In a survey

by the National Centre on the Educational Quality of the Workforce of more than 4,000 private establishments in the country (1995), the following four basic types of training were emphasised by employers. The type most frequently cited by them was instruction in the safe use of equipment and tools. Ranking second were training programmes that bolster attitudinal and behavioural skills which improve teamwork efforts or problem-solving skills, and training in sales or customer service. Instruction in the use of computers and other new equipment ranked a close third. A distant fourth was training designed to compensate for a lack of basic literacy and numeracy. (IRHE, 1995.)

An important question involved in assessments of the economic relevance of vocationalised education is: what are employers in fact looking for when they hire school leavers? Oxenham (1988), in his study of a number of developing countries, argues that there is no clear general explanation of what employers want from school, that there may be no coherent employer view, and that there is in any case no firm connection between scholastic qualifications and job functions. His inference is that vocational training is best left to the employers themselves and that schools should concentrate on improving what is their distinct responsibility, liberal and general education. Wilms (1988), writing about the United States, similarly pointed out that employers tended to favour applicants with academic rather than vocational educational backgrounds; they placed a premium not on technical skills but on good work habits and attitudes.

A comparative study of Britain, France and Germany (Noah & Eckstein 1988) reached a similar conclusion about the schooling system. The demand from employers is not exactly for pre-vocational courses relating to specific occupations or families of occupations. Noah and Eckstein noted that employers would like schools to be managed more "efficiently" (i.e. more in keeping with business notions of good management) and that they should teach more general knowledge about working life and its requirements. Employers want general secondary schools to define their work so that it better corresponds with good and practically oriented basic communication and computation skills. However, they seemingly do not wish schools to place greater emphasis on the specific skills associated with particular occupations. It may be that one reason for this finding is that employers often doubt schools' ability to do this properly.

Noah and Eckstein (1988) have argued that ending the disconnection between schools and employers requires more direct transactions between the two. Better

practice would result if employers would work with schools and colleges as a main supplier of their workers. However, in the future, society will most likely need citizens who are both literate and employable. It is schools' responsibility to teach the skills, attitudes, and perceptions that ensure this.

In Finland, a number of school reforms were implemented in the late 1990s in an attempt to respond to the anticipated trends on the labour market and in the organisation of work and to demands from individual learners and employers. It was considered that changes in the content of work, the introduction of new technologies, current forms of occupational mobility, and the rapid rate of change as such require employees who are more adaptable and able to acquire, in the future, new and applied skills and knowledge. A reform of TVET was proposed by both the employers' and the employees' organisations. A particular aim was to find ways of improving co-operation between education and the world of work. The reform of workplace learning arose from a recognition by employers, trade unions and educational authorities of the following problems:

- Curricula have been developed without co-operation with employers and enterprises.
- Educational provision and qualifications on the one hand and jobs and the competence requirements they entail on the other have evolved and been developed without reference to one another (and not always along the same lines).
- Despite good facilities, school-based learning environments designed to simulate real life have been unable to generate instruction as authentic as that made possible through social interaction at the workplace or familiarise students with the occupational structures involved as intimately as does practical experience at actual workplaces.
- It has been asserted that school-centred education has made young people's transition to working life more difficult.
- Purely school-based vocational education was considered expensive.
- High youth unemployment rates lead to marginalisation and indicate that there are flaws in the education intended to make young people capable of active social and economic participation.

- The level of esteem enjoyed by vocational education has depended on its match with working life and on collaboration between education and working life.
- The approaching retirement of the baby-boom generation and the emergence of new occupations and tasks will mean a labour shortage in about a decade. In anticipation, employers are seeking to recruit young people.

In addition to pressures from the world of work, today's school reforms have stemmed from new conceptions of learning.

Finnish employers (n=236) offering students workplace learning opportunities in their companies were surveyed by Lasonen (2000a). The company managers and employers regarded positive attitude and initiative, and personal qualities in general, as more important recruitment criteria than work experience. It was found that apart from work-related skills, general attitudes towards work and co-operation skills relevant to the job tasks characteristic of the respondent's line of business were the prime criteria for selecting new employees. The enterprises appreciate workplace learning and co-operation with schools, especially as a method for inducting new employees. In 1999, seventy-five per cent of the managers reported that they were going to organise workplace learning also in the future. At the same time, employers were also critical of existing collaboration arrangements. According to them, schools make little use of the companies' expertise. Similarly, co-operation could be planned better, especially as regards students' personal study programmes and student self-assessment.

Skills for the Future

Skill is a difficult concept to define. It is a term employed in many different ways. It can be used to mean dexterity and the technical knowledge associated with craft trades such as printing, engineering or building. It can be used in the sense of educational achievement as consisting of general skills such as numeracy and communication. It is also used to refer to the intellectual qualities identified in skills such as problem-solving, critical thinking and analytical ability (Paczuska, 1995). According to Niiniluoto (1992) and Sihvola (1992), the *philosophy of skills* involves a very broad range of problem areas, including among others *the theory of action, the*

philosophy of technology, the philosophy of art, and *the philosophy of sport and games.* The concept of skill also features in such fields as logic and the philosophy of science (thinking skills), ethics (the skills of good life), politics (the skills of governance or of "the possible") and the philosophy of education (the teaching of skills) (Niiniluoto 1992; Sihvola, 1992).

As Wellington (1987b) has argued, "skills" are not entities in themselves, separate from the people in whom they reside. Skills do not exist in their own right. Employers do not recruit skills. They recruit people. Skills reside in people and are acquired by people. Skills are not entities which are in short supply. In fact, what industries need are people with the abilities to develop new skills, acquire new knowledge, learn new concepts and theories, and adapt to technological change enthusiastically and without fear.

However, this survey of research highlights the fact that the need to improve the standard of communication and number application skills amongst young people is the concern most frequently voiced by employers and company managers. Competence in communication and the application of number and information technology have been seen as key skills for all young people. Many commentators, and employers in particular, have stressed the importance of developing wider skills, including inter-personal, particularly teamwork skills, presentational skills, a problem-solving approach, and the ability to "manage one's learning". It seems that in a society where commitment to lifelong learning is more and more essential, this last skill is a key to all the rest. Employers want entrants with a good command of language, both oral and written, and also a good grasp of basic arithmetic without needing the help of a calculator.

Core Skills

Obviously, employers are looking to education to respond to their wish to see new employees possessing or developing a range of skills that are valued highly in all forms of work. According to Dearing (1996), these include: personal and interpersonal skills, in particular the ability to work effectively as a member of a team; the ability to manage one's own learning as a skill needed for lifelong learning; and a positive problem-solving approach.

The Skills 2000 report published in 1989 by the Trades Union Congress (TUC) in the UK considers that everyone in work needs training at every stage of their

working life. While jobs may call for varying degrees of skill, all jobs were seen to involve certain "core skills" such as communication competencies, numeracy, literacy and a regard for health and safety. Also, it seems that technical, economic and structural changes in work and the economy require skills updating and evolution.

These additional core competencies central to every job include the development of tool-related skills, (the ability to use work tools effectively and efficiently), skills associated with working with other people, problem-solving skills, as well as a general orientation to work that is based upon pride in one's skill and job. Appropriate induction procedures were seen as essential to the achievement of these "foundation skills". Effective induction would provide the workforce not only with a foundation for development but also with a capacity for flexibility and transferability in the training process and at the workplace (McBride & Moreland, 1991).

Similar statements were published by the Further Education Curriculum Review and Development Unit (FEU, 1980; 1981; 1982) and the Institute of Personnel Management (1980). Very briefly, it seems that there is a high convergence regarding views on the skills and abilities that are required in the new economic situation. The central emphasis lies, in the existing literature, on the flexibility and adaptability of the future workforce. The transferability of skills in the workforce was seen as another important element in economic recovery. Related studies have recognised the need for a trained workforce able to move from one job to another and perhaps from one sector of industry to another in a situation where technological change and other factors are keeping the labour market in a state of constant flux. In this area, most of the educational systems even in the developed societies have failed to achieve their objectives.

Vocationalisation of Education

Vocationalism is a function whereby the educational system operates to maintain the workings of the economy, deriving its purpose and rationale from assessments of economic needs and requirements, such as the labour market's trained workforce needs (Ashton et al., 1990). According to Dewey (1916), vocationalism is:

> a process or activity, the imparting and acquisition of broadly defined skills and knowledge believed to have a discernible relationship with the capabili-

> ties needed for productive work and required or expected of workers, now and in the future (quoted in Skilbeck et al., 1994, pp. 4–5).

The vocationalisation of secondary education is here taken to mean a curriculum change in a practical or vocational direction. This is an old and recurring policy theme in many countries, especially in the Third World (Lillis & Hogan, 1983; Gustafsson, 1988). In his review of the declared aims of the World Bank-financed "curriculum diversification" (vocationalisation) programme implemented in a number of countries, Psacharopoulos (1988) concluded that its common aims are "relevance for the world of work" and "equity considerations".

It seems that as a result of programmes undertaken to increase the ratio of enrolment in general upper secondary schools, the secondary-school output has in recent years grown much faster than employment opportunities, particularly in most developing countries (UNESCO, 1984). Policy makers therefore need to address this problem in areas where its logical result is youth unemployment. These imperatives will probably shape educational policy regardless of whether the problems can be remedied by educational means or not. Vocationalisation has political appeal as an educational response to economic problems.

Thus, there is a tendency to present vocationalisation policies as a quest for ways of making education more relevant to the labour market: for better articulation between the content of schooling and subsequent application of school-acquired skills, attitudes, and knowledge in working life as a means of both obtaining a livelihood and becoming more productive in the work obtained (Lauglo & Lillis, 1988). It is the vocationalisation of mainstream general secondary schooling rather than more specialised and institutionally separate vocational training that is at the centre of policy attention because policy is responding not to shortages of trained people but to unemployment among those leaving the mainstream of the educational system, especially in developing countries. Hence, the thrust of vocationalisation as a policy is to graft vocational elements onto a curriculum that remains predominantly academic, without shunting students away from the path to higher education (ibid.). Vocationalisation policies may have the aim of discouraging unreasonable aspirations for further academic study at a time when selection for such studies is becoming increasingly competitive, and of teaching attitudes conducive to workplace discipline. A recurring theme in policy debates in developing countries, for example in Iran, is that students harbour "unrealistic" ambitions for fur-

ther academic study and eventual entry to white-collar jobs (Ministry of Education of Iran, 1996).

The Work-Related Curriculum

The belief that education should attempt to meet both the needs of the workplace and the requirements of employment is by no means a new issue, merely having been articulated, at different times, in different ways and discussed under different terms, such as the work-related curriculum. A work-related secondary-school curriculum made considerable progress during the 1980s in the UK to the point where its value was affirmed in the preamble to the 1988 Education Act and in guidelines for introducing the cross-curriculum theme of economic and industrial understanding (Skilbeck et al., 1994). However, the work-related curriculum is a specifically British term. The new vocationalism movement in the UK, which advocates more or better vocational courses for 14–16-year-olds, has now ensured it a secure place in English educational provision (Saunders, 1993).

The work-related curriculum is a concept which has the potential to make school-industry links function in a more unified and coherent manner (Miller, 1989). The term refers to those aspects of the school curriculum which deliberately relate to the world of work. In this process, the work-related curriculum will be shaped by four factors: the economy, the transition from school to work, the relevance of the curriculum and student maturation, and the needs of an educated citizenry (Jamieson, 1991). Watts (1993), explaining the concept, points out that the term covers two strands in the UK National Curriculum: economic and industrial understanding, concerned with the pupils' role as citizens, and careers education and guidance, designed to help individuals to perform their role as potential future workers.

What, then, is the work-related curriculum? What does it mean? What does it look like? Miller's (1989) definition seems to offer a clear answer to questions such as these. As he sees it, the work-related curriculum includes the following elements: some general aims concerning the preparation of pupils for adult and working life; a framework for knowledge, understanding and skills such as economic and industrial understanding and careers education and guidance; attention to those aspects of personal and social education which are connected with the world of work, such as activities involving enterprises; and work-related activities together with work

experience, industry weeks, mock interviews, equal opportunities and world-of-work days.

The work-related curriculum is, firstly, concerned with the management of pupils' future employment and, secondly, based upon a link between the schooling system on the one hand and industry and commerce on the other. Such a link may:

- provide an appropriate secondary-school curriculum which emphasises the skills required for employment after school;
- create a collaborative commitment uniting education and industry;
- offer students a range of relevant and simulating experiences;
- lead to balanced practical and academic courses and student activities;
- open up a range of learning styles which emphasise discovery methods;
- enable young people's transition from school to adult and working life through an emphasis on careers education and guidance, a reform of the school curriculum, and the provision of a range of active and creative skills which are necessary for students' future work (i.e. education for employment);
- give young people an understanding of the economy and industry (i.e. education about employment);
- enhance educational standards across the whole curriculum by making available a range of resources, environments and contexts calculated to improve the motivation and attainment of all students (i.e. education through employment); and finally,
- offer vocational preparation through work experience, work education, and other work-related activities.

Work-Related Activities

When the term work-related curriculum was coined at the end of the 1980s, it was generally interpreted as describing a set of learning experiences that made use of the world of work (or industry and business) as a resource and that made it possible to meet certain curricular aims and objectives in the most appropriate manner. Among the work-related activities brought into play were both those that involved students going out into the community and those that brought the community into school. Within the former category are workplace visits, work experience on employers' premises and work shadowing, while the latter group includes talks (e.g. on specific jobs or on application skills), work-related curriculum projects, mock interview schemes and business simulations. All of these activities are costly to organise, particularly in terms of staff time. A school, therefore, needs to think carefully about the intended object of any work-related experience before investing resources into organising it. Because activities related to work are a type of extended curriculum activities, their purposes have to be considered from a curricular perspective. There is a tendency to urge schools not to allow work-related activities to be viewed as time out of the curriculum or wasted time, but in order to achieve this these activities need to be justified in relation to their contribution to student learning (Miller, 1989; Saunders, 1993; Wellington, 1993).

However, a quick look at Table 3.2, giving an example of the work-related activities programme of an UK school, reveals that in the British schooling system, secondary schools are required to offer work-related activities to all students. This will keep students regularly involved with authentic working life and increase the likelihood that they will be appropriately prepared to meet the demands of the workplace.

Curriculum Aims

Miller, Watts and Jamieson (1991) have identified ten possible goals for work experience. According to Barnes and Andrews (1995), the following eight aims among them can be considered as relating to the curriculum:

1. enhancing the curriculum: enabling students to deepen their understanding of concepts learned in school and apply skills acquired there;

Table 3.2 *Example of a Programme of Work-Related Activities* (Barnes & Andrews, 1995.)

Students	Work-related activity	Learning objectives	Context	Curriculum location
Year 7	Work shadowing	Knowing about different types of work	Parents' workplace	Tutorial programme
Year 9	Insight into industry conferences	Understanding the inter-relationships between different work roles	In-school with employers from a large engineering company	Suspended timetable
Key Stage 4	Work experience	Understanding the changing nature of work and its impact on people's lives	A range of small and medium-sized employers	GCSE Integrated Humanities course
Post-16 students	Work-related projects	Understanding the concepts and skills involved in work contexts	A range of local companies	Various GCE, A-level and GNVQ courses

2. a motivational aim: making the school curriculum more meaningful and significant to students, thus improving their levels of attainment;
3. a maturational aim: fostering students' personal and social development;
4. an investigative aim: enabling students to develop their knowledge and understanding of the world of work;
5. an expansive aim: broadening the range of occupations that students are prepared to consider in the context of their personal career planning;
6. a sampling aim: enabling students to test their vocational preference before committing themselves to it;
7. a preparatory aim: helping students acquire skills and knowledge related to a particular occupational area, which they will then be able to apply if they wish to enter employment in that area;
8. an anticipatory aim: enabling students to experience some of the strains of work so that they will be able to manage the transition to work more comfortably (pp. 35–36).

Barnes and Andrews (1995) argue that aims 5, 6 and 8 relate specifically to careers education and guidance in that the first two of these objectives concern decision learning while the third one concerns transition learning. Some teachers, particularly those working with students with special needs, would argue that aim 3, which is related to personal and social education, is closely linked to careers work in the sense

that work experience can help to develop employability skills. Aim 1 (enhancing the curriculum) is connected with the subject curriculum, aim 2 (the motivational aim) with the curriculum as a whole, aim 4 (the investigative aim) with economic and industrial understanding and aim 7 (the preparatory aim) with vocational programmes.

Preparing Students for the Future World of work

We are told that too many young people leave upper secondary school without the skills, attitudes, and understandings which are necessary for successful entrance to working life. Among all age groups, teenagers have the highest unemployment rate in most countries (McCoy & Reed, 1991). Often jobs are readily available, but the young people lack what is required to get and hold down one. This might be caused by the rapid changes in industrial structure which are a consequence of certain interrelated factors such as technological innovations, societal changes, specialisation, varying patterns of demand for goods and services, and shifts in international competitiveness (Miles, 1991; Wilson, 1995). It seems reasonable to expect schools to teach students what they need in order to succeed in working life. But how can schools adapt the learning process to a changing economy? What practical policies and methods can be used to reshape educational programmes? What are the roles of career preparation, career guidance, work experience and other practical approaches to the preparation of young people for their future life? In the following sections our purpose is to explain the nature of career preparation, careers guidance and work experience. How have these concepts been considered in the educational systems of industrial countries and what results can be expected from these processes in the contexts of youth employment?

Career Preparation

In a report, *The Forgotten Half: Non-College-Bound Youth in America,* the William T. Grant Foundation Commission on Youth (1988) suggested that

> the young people need some assistance, and educators allied with employers and community leaders can provide it by giving students opportunities to

> reach beyond school walls. By moving education into the community, educators not only tap rich learning possibilities but also give youth the exposure and confidence they need to make it on their own (quoted in Paris, 1989, pp. 29–33).

If careers education is to form a part of the curriculum of a school, it could be there as a topic fully acknowledged alongside other academic subjects instead of representing an opportunity for the non-academic stream only. In order to make vocational preparation important in its own right and ensure it an equal place in the panoply of school programmes, it is necessary to ask schools to reconsider certain essentials regarding guidance and careers education. Indeed, a work preparation programme requires schools to develop both certain crucial elements of their overall functioning and their provision of careers education and guidance services. In particular, they must offer students information which enables them to make realistic choices.

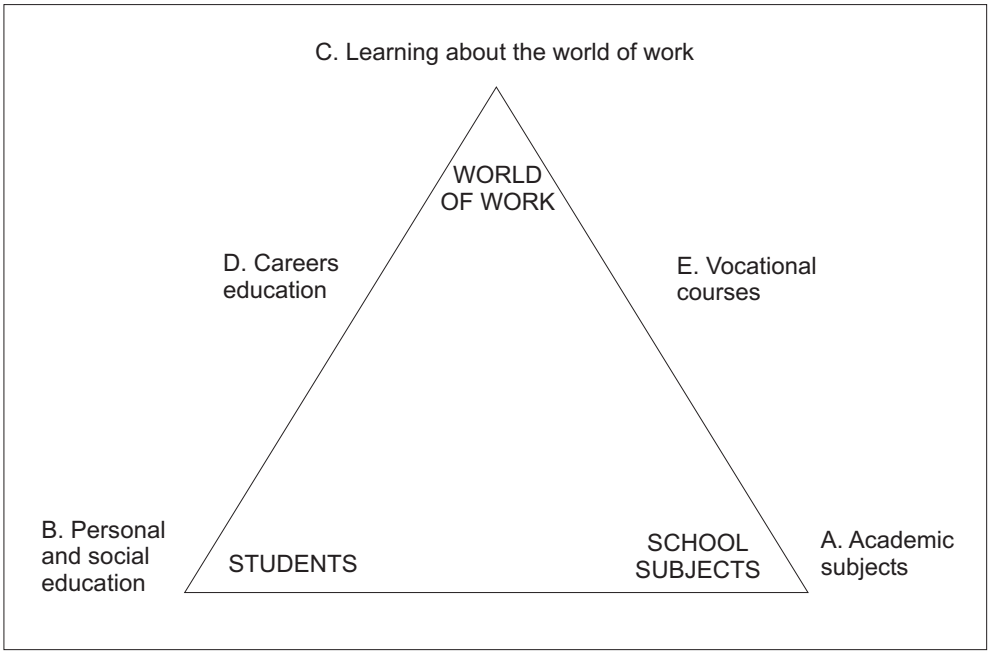

Figure 3.1 *Role of careers education in a school programme oriented towards the world of work* (Miller et al., 1991, p. 23).

This would make careers education an effective factor in leading students towards employment opportunities (Figure 3.1), but in some countries it has not been considered an important aspect of the school programme. For example, a survey by the Office for Standards in Education (Ofsted, 1996, p. 3) in the UK revealed that even though schools did offer their students generally sound careers guidance at the end of Key Stage 4 and the sixth form, on the whole careers education was handled less than successfully and students needed to be helped to develop a better and more realistic understanding of the changing nature of the workplace.

Goals of Career Preparation

One of the goals of careers education and guidance is to give students an opportunity to focus on a particular area of interest and to accumulate knowledge and skills that will assist them with entering the workforce. Preparing students for authentic work situations might allow them to gain the essential skills necessary for employment, such as those addressed so far in this chapter.

A second goal is to help students decide, before they enter the workplace or higher education, whether their area of specialisation is right for them. If they enrol on a work experience programme and try out the actual work of a person in the field of their choice and then discover that it is not what they want to do, they have lost little, and hopefully acquired positive work habits and attitudes (Paris, 1989). Indeed, preparation is not something to be undertaken during the phase when an individual is ready to leave upper secondary school or a post-secondary programme. Preparation begins at an early stage of a student's development: it is a lifelong process that can include career changes, continuing education and other elements. It seems that familiarising young people with the realities of the work situation is a very important factor in the process of equipping them for working life. It can be done in different ways, of which work experience is the main one.

Work Experience

In modern times, it is not common for young people to accompany their parents to the workplace and, in this way, pick up some sense of what will be required from them in adult life. Work experience is intended to fill this gap and also provide a worthwhile educational experience that can supplement school-based learning and

motivate the young person to take learning at school more seriously. It can be argued that the significance of work-related learning derives from its nature as an attempt to reintegrate the world of work into schooling by organising a period of education at a workplace under the joint supervision of the representatives of education and work. Work experience has in recent years become an accepted part of the school curriculum, for example in Britain and Finland (Lasonen, 2000a). Although it has a fairly long history among students within post-war educational systems, in the UK the actual first major educational document which mentioned work experience was the Newsom Committee report in 1963 (Watts, 1983). The report suggested that while such schemes were not "likely to become practicable or even desirable for the large majority of boys and girls", experiments might be encouraged. Work experience "can be defined as a situation in which people experience work tasks in real work situations, but without taking on the full identity of a worker" (Miller, Watts & Jamieson, 1991, p. 16).

Work experience is generally distinguished from other activities undertaken by students on employers' premises, such as work visits, work observation and work shadowing, on the basis of its emphasis on doing a job of work in conditions as close as possible to normal employment. Experience of work has been seen as a more appropriate title since the concept covers a range of experiences in a variety of modes, not simply a common fixed period of time. By and large, experience of work has been commended as a way to enable employers to gain a better understanding of education and consider their own expectations of young people when recruiting and training them.

Purposes and Effects of Work Experience

It seems that schools now attach more importance than before to helping students to appreciate how industry operates and what is its place in our society. According to Jamieson (1986), in the UK work experience has become widely recognised as a valid educational tool for guiding pupils in schools towards an understanding of industry as preparation for adult life. One of the main British strategies for making schooling more relevant to the needs of business – educating pupils about working life – involves teaching them about what business does (Bates et al., 1984). The concept of the world of work gains its particular significance from a wider vision of society in which it is contextualised. In educational terms, research provides a rhet-

oric and a framework within which schools can formulate programmes for informing their pupils about working life. However, it has been argued that teachers themselves have little direct knowledge or experience of the world of work. This problem is much more critical in the developing countries because of an absence of any partnership and links between teacher education and the workplaces.

Work experience schemes are probably one of the most obvious ways in which working life can be introduced into the school curriculum. However, the important question is: who are the pupils who will see schooling more relevant after work experience? Work experience may present students with an opportunity to stand on their own feet, show self-reliance, behave as an adult and feel as though they were a part of the real world. Hence, it is important that this process is generalised for pupils of varying ability and aptitude; it should neither be designed as vocational training nor aimed at a limited range of pupils only. There are many studies which show that work experience enhances students' jobs-related knowledge and interests and career maturity and that it has a positive effect on their career choice (vocational decision-making, choosing and securing a job), that it trains students in social and life skills, improves core skills, and represents an effort to differentiate between personal/ interpersonal skills and task-related skills (Pumfrey & Schofield, 1982; Jamieson & Lightfoot, 1982; DfEs, 1995; Weston, 1996; Lasonen 2000a; 2004). Here we return to the list developed by Miller, Watts and Jamieson (1991; see also Watts, 1983), discussed above in a curtailed form (the eight first aims) and from a slightly different perspective, of ten possible aims for work experience:

- enhancing the curriculum: enabling students to deepen their understanding of concepts learned in classroom settings, and to apply skills acquired there;
- a motivational aim: making the school curriculum more meaningful and significant to students, thus improving their levels of academic attainment;
- a maturational aim: fostering students' personal and social development;
- an investigative aim: enabling students to develop their knowledge and understanding of the world of work;
- an expansive aim: broadening the range of occupations that students are prepared to consider in the context of their personal career planning;
- a sampling aim: enabling students to test their vocational preference before committing themselves to it;

- a preparatory aim: helping students to acquire skills and knowledge related to a particular occupational area, which they will then be able to apply if they wish to enter employment in that area;
- an anticipatory aim: enabling students to experience some of the strains of work so that they will be able to manage the transition to work more comfortably;
- a placement aim: enabling students to establish a relationship with a particular employer, which may lead to an offer of a full-time job;
- a custodial aim: transferring, temporarily, some of the responsibility for particular students (p. 18).

At the same time, as a learning context the out-of-school environment may allow both young people and teachers to gain experience of working life, develop an understanding of the mechanisms of society and practice life-related skills of a social nature (Linklater, 1987). Work experience schemes are popular and are seen to have many benefits. Work experience is said to motivate pupils to work harder at school. In addition, it seems likely that pupils gain confidence and self-esteem, acquire information about available careers and are given an opportunity to test out possible careers. Above all, they seem to appreciate being treated as adults, having genuine responsibilities and being able to sample the "real world" (Turner et al., 1994; Azizi & Lasonen, 2004).

Couch (1995) foregrounds a similar range of outcomes of work experience but goes further, drawing some conclusions about work experience not mentioned by other researchers. For example, he believes that work experience can lead to an improved "understanding of management structures and the operation of a firm or organisation" (pp. 212–216).

Transition From School to Work

The final step in preparing students for working life is, as Menchel (1984) argues, the transition period from the academic world to the world of work. This is the stage at which a person learns those skills that are vital to getting started on a job. There is a range of skills, abilities, attitudes and understandings which have been mentioned before. In fact, academic competence alone is not enough to ensure a successful passage from school to work. Therefore, as Jamieson (1994) pointed out, an "effective transition from school to work is a fundamental goal of education for the life of work".

There is a tendency to argue that completing upper secondary school does not guarantee a good job, but youth employment and training programmes generally operate on the assumption that an upper secondary qualification is a precondition of employability. The ability to work – to take direction, co-operate with other people, act in a self-disciplined manner, and put in the energy required to carry a task through – is a prerequisite to employability. Most planners and administrators of youth programmes believe that a thorough grasp of what it means to work is more important than the development of specific vocational skills (Azizi, 2004).

A variety of transition programmes have traditionally been offered by educational authorities in the industrialised societies to assist young people in choosing a career or in preparing for employment. These programmes have been classified by Barnes and Andrews (1995) into a number of general categories, presented in Table 3.3.

These categories suggest, on the one hand, a logical connection between all these processes and programmes that schools are running as means of smoothing the transition from school to work. They also, on the other hand, make achievable the educational objectives of enhancing school leavers' employability and preparing them for a changing economy.

Table 3.3 *Categories of Transition Programmes* (Barnes & Andrews, 1995.)

Programmes	Definitions
Experiential learning	takes place wholly or in part through practical, community-based and on-site experience. Examples of such activities include co-operative education, internships, experience-based career education, work study, work experience, and job shadowing.
Co-operative education	is an experiential method of learning whose aim is to integrate a student's in-school programme of study with a community-based training station for learning. This provides students with an opportunity to apply classroom theory in the context of realistic hands-on experience by spending a part of their time at the training station.
Internships	generally offer after-school opportunities to apply skills acquired in school to the world of work. Academic credits are earned but no wage is paid. The intention is to offer the student a chance to experience a career choice by giving them a more realistic view of the inner workings of that particular career.
Work study	is a type of learning where periods of in-class instruction are augmented by learning at a place of employment for specified time blocks. These programmes do not link with in-class activities, contact between school and the employee is limited, and the work is completed for pay by low-income students.
Career education	involves collaboration between the business/labour/industry community and the formal education system to meet the goal of education as a preparation for work through a variety of in-school curriculum and out-of-school vocational experience.
Work experience	is an approach in which relatively short-term experiences, usually of one or two weeks, are arranged as part of a student's overall school programme. This usually takes place in the final year at school.
Job shadowing	refers to students spending time observing or "shadowing" someone in a work situation. This usually involves professionals (doctors, lawyers) high-profile positions (politicians) and highly skilled people (artists), settings where students would not have the skills for "hands-on" experience.

Incorporating Learning at Work into Vocational Education and Working Life: A Finnish Case Study

Learning Environments of Work-Based Learning

The term learning environment covers both formal education and training systems and settings outside them that generate learning experiences. Learning environments outside the formal educational system can be institutionally organised or they may be linked with everyday human activities. Among ways of describing learning environments are the following:

1. *Formal learning environments* involve activities organised by institutions of formal education that are based on curricula and lead to formal qualifications.
2. *Non-formal learning environments* offer activities organised by institutions of non-formal education that do not lead to formal qualifications.
3. *Informal learning environments* provide non-organised activities connected with people's everyday live, work and leisure hours. There is an additional type of learning, *incidental learning*, that may be considered a subtype of informal learning. Incidental learning is completely unplanned and unintentional and occurs as the learner is engaged in other activities (Aittola, Koikkalainen & Vaherva, 1997; Marsick & Watkins, 1990).

For adults, learning at work has been informal and incidental. Young people's work-based learning during their vocational education and training is a part of formal education, bound by qualification objectives and curricula. However, work-based learning can also include informal and incidental learning at the workplace both by students and by people representing the workplace.

Work environments of new kinds require workers to master, instead of single tasks, broad and interconnected ensembles of tasks and processes, accumulate what is called work-process knowledge (Boreham, Fischer & Samurcay, 2002). Work-process knowledge is associated with the social, cultural and historical structures of working life, entities of production, production and service processes, and models of work performance. A knowledge base covering such interconnected wholes consists of three types of knowledge: explicit or visible knowledge relating to the or-

ganisation and work performance; tacit knowledge; and domain-specific theoretical knowledge. Occupational competence of a high standard is underpinned by a wide-ranging cognitive foundation of this kind, and workplace learning is a significant context for the emergence of such a foundation. However, merely taking part in work processes will not generate work-process knowledge; instead, in order to learn at work the student must be appropriately supervised during the work-based learning process (Lasonen, 2001).

Learning Through and at Work

Arguments for bringing education and work into interaction and intensifying students' participation in real-life practices can be based on various learning theories. Thus, theories of sociocultural and situated learning have emphasised that learning takes place through participation in authentic practices and in social interaction (Lave & Wenger, 1991). Activity theory and developmental work research integrate learning and the development of work (Engeström, 2001). Dewey's classical notion of learning-by-doing highlights the significance of concrete experiences and reflection on them, as do theories of experiential learning (Kolb, 1984). The idea of the reflective practitioner (Schön, 1987) and theories of informal and incidental learning (Marsick & Watkins, 1990) similarly support the idea of learning through work. The constructivist view of learning and cognitive research on expertise, stressing the active role of the student and the integration of theoretical, practical and self-regulative knowledge, provide additional important arguments for linking education and work.

Although research on work-based learning has not focused much on motivational aspects or relied on motivational theories, motivational reasons have also been presented to justify this type of learning (Stasz & Stern, 1998). A recent study of workplace learning (Poikela, 1999) identified, among experts employed in an organisation, four different types of orientation towards their work and the development of their expertise: 1) situationally orientated learning where problems are handled as they arise, without making preparations beforehand; 2) action-oriented learning, based on analysing earlier experiences and problem-solving activities; 3) a developmental learning orientation involving the theoretical modelling of action and the creation of practical experiential knowledge; and 4) goal-oriented learning related to the management of action in a framework of values, visions and goals set.

Research on learning and the development of expertise has followed two major pathways which Sfard (1998) has labelled the acquisition metaphor and the participation metaphor. The acquisition metaphor analyses learning as knowledge acquisition while the participation metaphor emphasises that learning is a process of gaining membership of a certain community and becoming able to communicate within and participate in this community. The acquisition metaphor provides us with an understanding of individuals' cognitive knowledge construction while the participation metaphor brings into play a cultural perspective on research on learning. These different paradigms may be seen as complementary viewpoints which are both necessary if we are to make sense of the nature of learning in general and work-based learning in particular. Accordingly, the case study presented below follows mostly Billett's (1996, 1998) idea of integrating the cognitive constructivist and socio-cultural perspectives or the acquisition and the participation metaphors. This is based on the assumption that learning and the development of expertise are knowledge construction processes unfolding in reciprocal interaction between individuals and their socio-cultural environment. The union of cognitive and social constructivism, of contextual and socio-cultural approaches, is seen here as a framework for developing expertise at the interface of education and work.

Student learning at workplaces involves many partners: students, teachers, workplace supervisors, mentors, employers and employees working with students. It is assumed that the different collaborators representing education and the workplace may have different perceptions of what workplace learning or work-based learning is all about. For example, Candy and Mathews (1998) have explored the variety of perceptions of workplace learning and identified five different views, where the workplace is seen as: 1) an environment for formally accredited learning; 2) a setting for complex technical interactions and problem-solving; 3) a site for sharing and creating knowledge; 4) a part of the knowledge society; and 5) an organic entity capable of learning and adaptation in its own right. The goals of work-based learning may similarly vary. Hager (1998) distinguishes two main types of fundamental goal underlying different approaches to workplace learning: 1) personal growth and development and 2) developing human capital needed for a flourishing economy. Hager maintains that these distinct goals and perceptions of work-based learning are often in conflict. Therefore, it is important to analyse the various forms of interaction between education and the world of work from the viewpoint of all parties or stake-

holders, including students, teachers, workplace supervisors, employers and people working in the enterprises providing students with work experiences.

Work-Based Learning in Finland Today

In Finland since the 1990s, vocationalisation of education has meant, chiefly, closer links between school-based vocational education and training and the world of work. Reforms of TVET have emphasised co-operation of a new kind between education and working life, for example through the development of methods of contextual learning and work-based learning. As a result, Finnish upper secondary vocational education curricula and initial vocational qualifications now include workplace learning periods.

All secondary- and tertiary-level vocational qualifications require a minimum of a six-month training period at authentic workplaces. As laid down in the guidelines of the National Board of Education, workplace learning should be goal-oriented, planned and assessed, linking it closely with the curricula of formal education and training. Another aim is to give students workplace learning experiences that will enable them to integrate their theoretical knowledge base with practical action.

Workplace learning periods have brought also working life both new challenges and new opportunities (Lasonen, 2001). Vocational education establishments are training workplace supervisors to oversee and have responsibility for students' workplace learning. The integration of work-based learning into initial vocational education and the training of workplace supervisors have the potential to renew also the occupational skills of the employees of the training company and promote continuous learning at the workplace. The expertise of qualified workplace supervisors can be used also in enterprises' own in-service training.

Employment Trends

Internationally, the prevention of youth unemployment is a central aim of the vocationalisation of education. In Finland in a long term (1973–96), youth unemployment rates have been 2.4 times as high as those of adults (Statistics Finland, 2002). Towards the end of the 1990s Finland managed to reduce its overall unemployment rate to a figure close to the EU average (and to the same level as in, for example, France), but youth unemployment remains a problem that can scarcely be

fully solved merely by raising the number of study places. In a situation where a third of the working-age population under 25 is without employment and where three fourths of them are looking for their first job, it is very largely the labour market, not the educational system, which is not functioning properly. While in Finland nearly half of those under 25 were without a job in the mid-1990s, in such countries as Austria and Germany, which have well-established apprenticeship training systems, the corresponding figures were below 10 per cent, and amounted even in Sweden only to some 20 per cent. The OECD has, accordingly, emphasised the importance of apprenticeship training to young people's integration into the labour market.

In 1990, the average unemployment rate among those who had completed their studies in Finnish educational establishments within the five preceding years was as low as 7 per cent, after which there was a sharp rise until 1993, when 32 per cent of programme completers were without jobs. Since then the figure has slowly gone down, falling to 24 per cent in 1996 (Statistics Finland, 2002).

Purpose and Target Groups of the Case Study

The Bridge From Vocational Education to Working life project (hereafter the Bridge project), funded by the ESF (European Social Fund), was launched in August 1998 by the National Board of Education under the direction of the Ministry of Education. Previously, a number of pilot projects on workplace learning had been started in various parts of Finland. The reform was intended to enhance vocational students' qualifications for further studies and/or their readiness to enter the labour market. The rationale behind this deepening and broadening of the contents of vocational programmes derives from the idea of authentic learning, learning at the workplace. The Bridge project was implemented all around Finland over a period extending from 1998 to 2001 with the participation of some 10,000 people including students, teachers, workplace supervisors and employers.

The national follow-up study of the Bridge project covered 2,028 people, of which 1,051 answered the questionnaires. The study started in February 1999 and ended in 2002. The purpose of the follow-up study was to answer two questions:

(1) What are workplaces, in the opinion of employers and students, like as learning environments?

(2) What are enterprises and educational establishments learning from their collaboration?

The employers and students were given a structured questionnaire, while the workplace supervisors and teachers answered open-ended questions. The target group of the follow-up study consisted of (1) teachers (n=209) and students (n=631) from a number of Finnish vocational education establishments representing various study fields that in the school year 1998–1999 took part in the Bridge project; (2) the workplace supervisors (n=613) who supervised the students; and (3) the employers/managers (n=532) whose enterprises served as their learning environments.

This case study brings together the materials collected from the students/workplace learners and the employers/managers involved in the project. The students came from different sectors of vocational education and training, including natural resources; technology and transport; tourism, catering and home economics; business and administration; health and social services; leisure and physical education; and culture.

The reliability of the questionnaires was tested using the Cronbach's alpha index. Cronbach's alphas calculated for the structured question batteries aimed at the students, measuring chiefly their assessments of the success of their workplace learning period and its effects on their learning and life situation, ranged between .78 and .93. Similarly tested with Cronbach's alpha, the reliability indices of the question batteries included in the employer's questionnaire ranged between .66 and .88.

Enterprises as Learning Environments

The enterprises were analysed as learning environments on the basis of background data on the employers, the characteristics of the enterprises/workplaces, the forms of collaboration found between the vocational education establishments and the enterprises, and the enterprises' criteria for selecting new employees. The analysis approached the subject from three directions: (1) the employers' background data, casting light on their function as role models for the students; (2) the employers' own assessments of their enterprises as learning environments; and (3) their attitudes towards collaboration with the educational establishments. This section considers the enterprises and workplaces as they are seen as learning environments by

the employers/managers. The next section focuses on the students' observations and experiences during their workplace learning period.

Background Data on the Employers/Managers

A little more than half (51.5%) the employers participating in the Bridge project were women. Most of them were middle-aged; 7 out of 10 were between 36 and 56. Most had children of their own so that they were not unfamiliar with the task of bringing up the next generation. As regards basic education, 2 out of 10 employers had an education limited to elementary school, a little over a third to upper secondary school. Most had post-secondary or tertiary-level qualifications.

Technology and transport was the largest study field represented among the respondents, with commerce and administration the next largest field. Nearly 9 out of 10 employers had more than ten years' work experience. The majority of the companies were service enterprises; 2 out of 10 were industrial firms, while the same proportion were public-sector enterprises. Nearly a third of the enterprises had been operating for more than ten years. Of the employers who answered the questionnaire, 7 out of 10 told that they were owner-entrepreneurs or had senior executive duties, while 1 out of 10 belonged to middle management. The rest considered that they were performing the duties of an expert.

Characteristics of the Enterprises/Workplaces

A third of the enterprises had a staff of 1–3 people, more than half one of less than 50 people. Most were limited companies. Sole proprietorship (business name) was the company form of 1 out of 10 enterprises. Turnover varied from a few hundred thousand to hundreds of millions of euros. Specialisation, customer service, versatility and the staff were mentioned as the enterprises' strengths.

It was essential from the point of view of ensuring young people's employment to know whether the workplaces would be able to take on new employees in the near future and whether they in fact planned to do so. Only 2 out of 10 workplaces participating in the experiment foresaw being able to hire new people within the next five years.

Employers' Views of Their Enterprises as Learning Environments

The employers were asked how many workplace learners they had had within the last year. Most enterprises (40.7%) had had only one student; 27.4 per cent had had 2–3 workplace learners, 19.8 per cent 4–10 workplace learners, while 7.9 per cent had offered a workplace learning experience to more than 10 students.

The enterprises were described as learning environments using the following statements. The percentages given for each statement indicate the proportion of positive responses:

- The enterprise's business idea includes developing co-operation with educational establishments (54.4%).
- There are abundant training and learning opportunities (73%).
- All employees have opportunities to learn (72.6%).
- Old practices are called into question (43.1%).
- Feedback from different parties is used as a resource (78.7%).
- Employees are encouraged to come up with suggestions (74.4%).
- The management has confidence in the personnel (91.3%).
- Employees are encouraged to learn (81.7%).
- There is shared learning from problems (80.5%).
- Collaboration skills are developed (85.1%).
- Decisions are made as teams (61.4%).
- Superiors familiarise the students with the workplace (78.7%).
- Study programmes are discussed together (63.5%).
- Student performance is assessed (75.5%).
- The students are given individual guidance (43.4%).
- Feedback is gathered from the students (47.3%).
- The students are enthusiastic (78.8%).
- There is regular collaboration with the teachers (63.1%).
- The educational establishments and the enterprises learn from each other (55.1%).
- The workplace supervisor acquaints the students with their assignments and other tasks (85.9%).
- The employees are eager to guide the students (70.5%).
- The employees feel responsible for the students' learning (68.4%).
- The employees are informed about the guidance given to workplace learners (78.9%).

Altogether the employers wished to see their enterprise as a positive learning environment.

Co-Operation Between Enterprises/Workplaces and Educational Establishments

Co-operation with educational establishments was perceived to bring more advantages than disadvantages. In the employers' opinion, collaboration benefits above all the enterprises, a view supported by the actual interaction between the parties. On the other hand, co-operation in the form of workplace learning was also said to take up resources. As methods for maintaining networks between educational establishments and enterprises the employers suggested communication, training and development meetings, and ensuring resources and continuity. The enterprises collaborate with the educational establishments on organising workplace learning periods, final study assignments and diploma works and on personnel exchanges. Of the employers 68.5 per cent expressed themselves willing to promote co-operation with and organise workplace learning in collaboration with educational establishments. Three fourths of the employers/managers reported that they have a commitment to workplace learning also in the future.

The investigation showed the extent to which links between education and working life are implemented in practice. The following percentages indicate how many employers responded positively to a statement or characterised it as "highly accurate":

- The enterprise's expertise has been used as a resource in the educational establishments (26.9%).
- The teachers maintain adequate links with the enterprise (50.2%).
- The workplace and the educational establishments plan their collaboration together (36.1%).
- The enterprises have representatives in the management teams of the educational establishments (9.9%).
- The teachers have a contribution to make to the enterprises (34.8%).
- The enterprise consults with the educational establishment (11.6%).

The responses show that there is room for improvement in forms of collaboration.

Criteria for Selecting New Employees and Qualities Required at Work

Workplace learners' studies in the enterprises were seen above all as a way of training the students and inducting new employees. The employers placed most weight on a student's positive attitude, initiative and personal qualities. A further asset men-

tioned as more important than previous work experience were interaction and negotiation skills. As seen by the employers, the most important qualities needed at work were practical field-specific skills, independent problem-solving skills, readiness to constantly develop one's own competence, being willing and able to collaborate, self-confidence, faith in one's own occupational skills and knowledge and mastery of one's own life.

Workplace Learners' Assessments of the Enterprises as Learning Environments

This section discusses the background data on the students, their study performance, career development and plans, how active they were as job seekers, their assessments of the organisation of their workplace learning periods, and their opinions about how these should be organised. The workplace learners studied in a total of 40 enterprises and completed, in their educational establishments, 28 different qualifications.

Background Data on the Workplace Learners

Of the students who returned the questionnaire 206 were girls (48%) and 220 boys (51.6%). Most were aged 17–19 (34.3%) while 33.1 per cent were aged between 20 and 21, 24.2 per cent between 22 and 25, and 8.2 per cent were over 26. More than half the workplace learners (56.8%) had a previous vocational qualification.

On the basis of their last qualification, 69.5 per cent of the students reported that they were giving a good average work performance. They also had faith in their study success: 95.1 per cent thought that they were doing well or would do well if they made an effort. Only 1.9 per cent answered that they were doing badly.

The students were also asked about the strengths of studying in the Bridge project. Teamwork assignments were considered strengths by 42 per cent of the students, followed, in order of preference, by independent assignments (35.9%) and individual modules or subjects (29.8%).

A good third of the students had, at the point of answering the questionnaire, accumulated half a year's work experience at most, while 15 per cent had work experience ranging between half a year and a year and 13.4 per cent had a work history of 1–3 years. More than half the students (53.1%) had already been out of work, a good third (38%) of them for a little less than a year or for a year. Most of the

students (58.5%) intended to look for a job after completing their present studies, while 11.7 per cent planned to continue their studies at a polytechnic (vocational higher education college) and 10.3 per cent to combine work and studying.

How Active Were the Workplace Learners as Job Seekers?

A willingness to actively seek work may be considered an essential factor in transition to working life and continued employability. Most of the students who took part in the survey completed their studies in May-June 1999. By April, 57.5 per cent had been looking for a job, 15.3 per cent monthly and 4.2 per cent weekly, while 38.7 per cent had not yet made any attempt to find employment. Of those workplace learners who had hunted for a job 39 per had asked for one at the places where they had been doing their practical training or studying, 2 out of 10 at the employment office. Jobs had been offered to 42 per cent of the students, but only about half the offers were, according to the students themselves, in keeping with their training. Nevertheless, only about 1 out of 10 had turned down a job offer. Nearly half the students (48.3%) had considered setting up an enterprise of their own, been entrepreneurs or saw it as a stopgap. On the other hand again, nearly half of them (49.8%) had given no thought to setting up an enterprise. When the workplace learners were asked about the strengths they used to sell themselves to an employer, those mentioned most often were sociability, reliability, competence or occupational skills, and diligence. Next came initiative and the ability to learn. A small proportion of the students saw themselves as possessing no strengths at all.

Workplace Learners' Personal Expectations and Targets

The students were asked to place various things linked with the targets set to their workplace learning period into an order of importance. They considered it very important that

- their assignments are varying (94.6%);
- they are given responsibility (87.7%);
- they learn to perform new tasks (96.5%);
- they are able to perform their duties well (96.9%);
- they are trusted and are able to trust other people (96.7%);
- they are treated as equal members of the work community (97%);

- they are treated fairly at the workplace (95.8%);
- agreed-on rules and norms are observed (95.1%);
- safety and health are assured at the workplace (96.3%);
- they are allowed to perform their assignments independently (90.6%);
- they are able to apply what they know (88.3%);
- they can rehearse what they have learned (83.6%);
- they learn to know new people (79.1%).

As regards implementing the workplace learning period at a single workplace or several workplaces, 38 per cent of the students would like a single learning environment, 48.7 per cent several learning environments.

Thus, being able to apply what one knows and rehearse what one has learned and learning to know new people were considered fairly important things. Nearly half the students thought it important that they have the option to do their practical training at several workplaces. Some 2 out of 10 students preferred to receive their practical training at a single workplace.

A closer alignment between education and working life is intended to smooth students' transition to working life by fostering their employability skills. What skills did the Bridge project, according to the students themselves, promote in workplace learners? They reported that studying in the Bridge project had affected most profoundly their ability to understand and accept different people and, naturally, the growth of their occupational skills. Advancing one's career and enhanced self-confidence were also mentioned as the most positive outcomes of workplace learning. Opinions about its effect on willingness to take up entrepreneurship were sharply divided: 45.5 per cent of the students thought workplace learning had had a negative effect while 44.8 per cent saw its effect as positive.

The students were asked how far certain factors affected the ways in which their career or study goals and plans changed. Personal abilities and skills, shifts in the students' own thinking, and the labour market situation were put forward as the most important factors. Feelings and fears of failure were reported by 14.6 per cent of the workplace learners as exerting a great deal of influence on changes in their targets and plans.

More than half the students said that their employment (66.7%) and further study (51.6%) plans were unclear. Many of them saw their experiences from the Bridge project as very positive even if they found some flaws in its implementation.

Organising Workplace Learning Periods

All those involved in workplace learning as a part of the Bridge project emphasised the scheduling of workplace learning and familiarising students with the workplace. The students were asked about the people who took part in their workplace orientation, whether they had had a choice between several workplaces, which things were discussed during their orientation, how long it took them to become familiar with the workplace, how long workplace learning periods should be, and about study visits, their final study assignment, and how their workplace learning had been scheduled.

More than half the students (53.5%) had been able to select from several workplaces as the setting of their workplace learning. They chose a workplace on the basis of personal interests, good location and challenging assignments. According to the students, they were most often familiarised with the workplace by employees and workplace supervisors, followed, in order of frequency, first by the superior at the workplace and then by their own teacher. Of all the answers 6.1 per cent indicated that no workplace orientation had been provided. The following things were mentioned by the students most often as having been discussed during their orientation period:

- the line of business and objectives of the workplace
- the collective agreement regulating the field
- the students' duties
- industrial safety instructions and regulations
- the goals of workplace learning and assessment principles
- the workplace learning contract
- linking the students' personal study programme with workplace learning
- implementing self-assessment
- confidentiality at the workplace
- the students' rights
- planning assignments
- strengths and future plans of the workplace
- insurance.

A good quarter (27.2%) of the students thought that one week is enough to become familiar with a workplace while a third (35.2%) considered two weeks a suitable period. According to 105 workplace learners (24.6%), learning the ropes at the workplace takes 3–4 weeks while 33 students believed that it would take more than

a month. In the more service-intensive fields, two weeks were mentioned more often than one week as the time required for finding out how things work.

The length of the workplace learning period is an important issue to the learners and the employers in particular. When the students were asked about the suitable length of a workplace learning period spent in the same workplace, 199 respondents (46.7%) mentioned 1–2 months while 2 out of 10 considered 3–4 months appropriate. There were 79 students who would have liked to stay at the same workplace even longer (5 months or more).

As regards the scheduling of workplace learning periods, the week (23.2%), the month (13.4%) or the term (52.1%) was divided between learning at the educational establishment and at the workplace. The greater part of the week, month or term was spent at the workplace. The theoretical courses were taught at the educational establishment between the workplace learning periods.

More than half the students (53.5%) had all of their workplace learning period at a single workplace, 21.4 per cent at two and 17.5 per cent at 3–4 workplaces. Eleven students (2.6%) reported that they had worked at five or more workplaces.

On being asked about the instruments used in monitoring workplace learning and in formative assessment, the students mentioned learning diaries and talks with the workplace supervisor as particularly common methods. Reflection, self-evaluation forms and portfolios were also listed.

Workplaces as Learning Environments: Learner Assessments

The students were asked to judge, on the basis of their own first-hand experience, what things they felt that they had learned best at the workplace and at the educational establishment respectively. In their estimation, the workplace had been the best setting for learning field-specific occupational contents, technical skills, the use of tools, decision-making in authentic environments, and for combining theory and practice. The things they had learned best in their educational establishment were the theory of their occupational field, basic knowledge and concepts and, in real life-oriented exercises, the rationale for a particular type of action. As regards the benefits of workplace learning, the students brought up such aspects of the work process as mastering the rhythm of working, learning to work under pressure, learning the approaches and methods used in the job and gaining more self-confidence and assurance. While the workplaces provided an opportunity to become

acquainted with the situation-specific dimensions of a job through experience, the educational establishments enabled the students to gain a broader understanding of their future occupation (e.g. its ergonomics and social function, chemistry, physics and aesthetics). The workplaces were considered the best settings for acquiring sociability, gaining an overall grasp of various aspects of the occupation, learning to think, and familiarising oneself with the customs and rules of the work community. Some students saw educational establishments as the best places also for learning practical skills and working methods.

Generally speaking, the students described their experiences and learning outcomes at the workplaces in favourable terms. Nearly three fourths (74.2%) of the workplace learners perceived the atmosphere at their workplace as positive and encouraging. Only eight students (1.8%) characterised it as negative. Every other student had completed their workplace learning period without encountering any difficulties. Every other student mentioned being hampered by several difficulties, said to stem from

- inadequate guidance and counselling
- shortcomings in the students' own abilities
- the failure of contact teaching periods at the educational establishment to interest them
- the failure of studying to interest them
- difficulties with their friends or family
- inadequate basic studies.

Only a few students perceived the workplace as such as not the best possible setting for work-based learning.

The students assessed the workplaces where they studied on a scale from 1 (lowest) to 5 (highest). Most of the students, 52.3 per cent, gave their workplace a grade of 4, 18.5 per cent the highest grade, 5; together these two groups accounted for 70.8 per cent of all the students. The intermediate grade, 3, was suggested by 96 students (22.5%). Only 15 students (3.5%) awarded their workplace one or the other of the two lowest grades.

More than three fourths of the students considered that

- they were given an opportunity to assume responsibility for task complexes (87.6%);
- they were given encouraging feedback on their work (83.1%);

- they were able to make use of their abilities and skills during their workplace learning period (83.3%);
- their assignments developed their thinking (83.3%);
- the work they performed in the enterprises included a variety of assignments (82.9%);
- the permanent employees appreciated workplace learners (83.1%);
- they felt that they were equal members of the team (76.7%).

Of the students 157 (36.8%) maintained that they had had no say in decisions about their own work and working environment, while 259 (60.8%) were of the opposite opinion.

The students were asked to judge a list of items in order to find out how much collaboration of the kind linked with workplace learning actually took place, how much exchange and comparison of experiences there was with fellow students, how much guidance and feedback the students received, how personal study programmes were implemented, how smooth was the flow of information, and how far expectations were met. All down the line, the assessments fall into the highest positive quartile. However, the respondents wanted more detailed information about the educational benefits and financial aid for students available to them during their workplace learning period. They also wished that the contact teaching periods delivered at their educational establishment would be efficient in the sense of there being a frequent enough provision of such periods suitably scheduled for the intervals between the workplace learning periods and that contact teaching periods would enable systematic discussion on and an exchange of experiences of workplace learning.

The students also expressed their opinion about the extent to which they had, during the Bridge project, attained occupational, core and other skills. As they saw it, their best learning achievements involved the acquisition of collaboration skills and initiative, independent thinking skills and self-confidence, field-specific practices and resources for the continuous development of one's own occupational skills, independent problem-solving skills, skills in using information sources, the skills required in the self-evaluation of one's own work, planning skills, foundations for pride in one's own occupational field, and the basic values of life management. The students felt that they had been least successful in mastering the skills required for doing business using a foreign language (53.5%) and for setting up an enterprise of their own (47.5%), followed by the acquisition of writing skills and the construc-

tion of a knowledge base for further studies. In their view, the workplaces had been the best settings for learning basic field-specific skills, sociability and the higher occupational skills and for gaining assurance and self-confidence.

School-Based Learning, Work-Based Learning and the Prevention of Youth Unemployment

Resnick and Wirt (1996) showed that there are four significant differences between school-based learning and work-based learning:

- Schools tend to focus on individual performance rather than on socially shared action;
- Educational institutions tend to emphasise abstract thinking rather than the application of skills and knowledge;
- Schools rely on the manipulation of mental symbols rather than on hands-on activities; and
- Schools may generalise knowledge rather than focusing on situation-specific knowledge and skills.

As against this, training based at the workplace will challenge also work-based learning delivered at schools.

Today, the vocational education system emphasises contextual learning methods rather than more abstract approaches. Workplace-related learning projects or youth apprenticeship programmes or programmes bridging school and work are designed to base learning at the workplace so as to offer students opportunities for a contextual, meaningful and relevant use of knowledge. Learning occurs in a community of experienced practitioners during efforts to situate learning in the context of its utilisation. The results of the above study of the Bridge project showed that the employers saw their companies as appropriate learning environments while the students, in a similarly positive vein, found learning in workplaces a relevant and positive experience.

As regards their more specific attitudes, despite a good half of the students reporting that they were studying to improve their employment prospects, the students' overall expectations concerning the return on their investment in education were as anticipated: among reasons for pursuing a given qualification, finding one's study field interesting was nearly as important as eventually securing a job. In the

students' opinion, their studies had improved their occupational skill, their ability to understand and accept people of different kinds, and their employment and career prospects. It is obvious that these things represent returns on a human capital investment that are simultaneously individual and social. By contrast, the work-based learning experiment had a less positive effect on the students' willingness to set up an enterprise of their own and on their financial situation. However, the programme participants felt that learning at work had given them many skills of a kind considered also by the enterprises as the most important preconditions of successfully performing the tasks relevant to their field and as the most important criteria used by them in selecting new employees.

While the workplaces provided the students with an opportunity to become familiar, through experience, with situation-specific dimensions of the work they eventually hoped to do, the educational establishments enabled them to gain a broader understanding of their future occupation. The workplaces were seen as the best places for learning sociability (accumulating social capital), gaining an overall grasp of various aspects of the occupation, learning to think and acquainting oneself with the customs and rules of the work community.

In the eyes of the managers of the enterprises offering, in the Bridge experiment, work-based learning placements to students from vocational upper secondary education establishments, a positive attitude and initiative and personal qualities in general are, among the types of human capital, more important recruitment criteria than, for example, formal educational qualifications and work experience. The managers' answers suggest that these qualities, related to proper attitudes towards work and to co-operation skills, are – in addition to practical occupational skills – those most needed also in tasks characteristic of the respondents' given line of business. By contrast, foreign language and writing skills, often perceived as important by educational establishments, were rated as the least significant qualifications.

The managers' answers to the questionnaire suggested that in the enterprises, work-based learning was seen as a longer-term investment even if managers of enterprises of different sizes and representing different lines of business do not, naturally enough, in all respects agree on its benefits or profitability. Particularly in a short term, promoting the enterprise's productivity was not among the most important functions of work-based learning; nevertheless, work-based learning was considered a suitable method of, for example, developing co-operation with educational establishments and of inducting new employees.

For large industrial enterprises, the benefits of work-based learning meant primarily easier recruitment, while the owner-entrepreneurs of small firms and the self-employed gained also new ideas and partners. The size or line of business as such of an enterprise did not seem to affect its ability to organise work-based learning, but as earlier research has also shown, in companies of smaller size it was more difficult to provide workplace learners with a trained supervisor. On the other hand, the smaller enterprises often operated in fields where it was possible to offer workplace learners tasks that were more varied and comprehensive than those that were available to them in, for example, companies engaged in industrial production.

The survey among the workplace supervisors revealed that student supervision meant somewhat increased workloads and responsibilities. Gaining new knowledge and new perspectives were the things most often mentioned by the supervisors as the benefits of their new task.

The teacher survey suggested that work-based learning had brought to the teacher's work new elements that had broadened its scope and enriched it by requiring the teachers to develop professionally, particularly as regards pedagogic and co-operation skills. The vocational teacher's role has changed in certain respects; despite reduced teaching hours, in the Bridge project the teachers' overall workload seemed to have grown. At the same time, a better match between education and the world of work had enabled also educational establishments to rationalise their operations and approach their tasks in a more systematic manner.

Quite a good fit between education and working life was also what all the parties covered in the survey thought had been achieved through work-based learning. A consideration of work-based learning from the perspective of investment led to the conclusion that on average, the students believed they were acquiring skills essential for finding a job and improving their employment prospects, that taking on workplace learners did not bring the enterprises any additional costs, that the workplace supervisors did not see their supervisory duties as too much of a distraction from their main job, and that even the teachers were mainly satisfied with the changes that had occurred in their work. However, there were also shortcomings: unpaid work did not always motivate; the students were not given enough guidance, for example because a workplace supervisor might have been unenthusiastic about looking after them or lacked the requisite skills; on the other hand again, in small enterprises unreasonable amounts of time were sometimes spent on orienting and guiding the students; the teachers' workload had increased and they were constantly

pressed for time and suffered, as a result, from feelings of inadequacy. But then again, in a situation where the requirements of working life have changed rapidly in some fields work-based training has been one of the best methods of preparing young people, particularly those at risk of unemployment, successfully for an occupation. A goal-directed and meaningful partnership between education and work was also achieved.

The employers were motivated to provide training places by a wish to recruit new employees. The results of follow-up studies revealed that after they had completed their studies, about a third of the students who took part in the study found a job in a training enterprise (Lasonen, 2004), suggesting that workplace learning had not only fostered their employability skills but also given them a first foothold in the world of work.

CHAPTER FOUR

4 Education-Business Partnerships

Introduction: Can Educational Systems Do It Alone?

A realistic and effective process for ensuring that school leavers are prepared for their future employment is not an undertaking that can be carried out in a vacuum. Nor can it be carried out by any one of the involved parties on their own. Indeed, achieving a reasonable degree of partnership between public and private sectors and educational institutions and business and industrial organisations has been a desire in many societies. However, it seems that most countries have, traditionally, suffered from a lack of such integration and co-operation (Azizi, 1998). The last decade of the twentieth century was a turning point in this respect. The dramatic technological developments of the 1990s and the labour market's need for more competitive, more qualified and more relevantly skilled and creative workforces on the one hand and schools' need to be more efficient both internally and externally (in response to strong pressure and emphatic demands from their stakeholders and partners) on the other has forced the various agents to forge closer ties, adopt positive roles and accept more responsibility for equipping young people for their future working life. This is what we mean by education-business partnerships: multifaceted cooperation and collaboration between public and private sectors on and individual and collective commitments towards better youth preparation for the world of work.

A strong partnership between education and business and industry is seen as an important element of countries' policies for improving national competitiveness in the global economic race (Hillage et al., 1995). Such partnerships can be made feasible through significant investment in this field by both educational and industry organisations (Harris et al., 1997). Basically,

> Industry and Education are two important social institutions which have some priorities of their own and some which are shared – and any partnership should commence with a careful negotiation of these such goals, some form of needs/resources audit being required before there can be a genuine sharing of one another's assets (Confederation of British Industry, CBI, 1988, Para. 23).

Many employers have some sort of involvement with schools. Studies in Britain showed that around three in four employers have established links with educational organisations with a view to covering their longer-term skills needs (Hillage et al., 1995). While such partnerships vary in their approaches and aims, they have the potential to generate some benefits for both schools and industry; these will be discussed later. If we picture these links on a continuum, it is possible to see two different emphases. Some companies are taking a strategic decision to concern themselves with many aspects of educational activities, while some others have no more than a positive intention towards doing so.

There are various programmes of education-business links in the US, Australia, Canada and the UK and Finland, operating in both the private and the public sectors. Researchers have pointed out that a poor education and training system which has led to low worker performance has been seen as one of the crucial reasons for declining economic competitiveness in these countries (Brown & Lauder, 1996; Ashton & Green, 1996). Conversely, one possible way to enable an educational system to play a more positive role in economic development is linking these two systems appropriately.

In Finland, the framework for a workplace learning experiment was created in the Finnish government's plan for developing education and research for 1995-2000 (Ministry of Education of Finland, 1995). Reforms of vocational qualifications included workplace learning periods of at least six months. The government's next development plan, covering the years 1999–2004 (Ministry of Education of Finland, 1999), stressed monitoring the ongoing reform of vocational qualifications, students' transition from education to work, and the construction of routes to further and higher education. Learning at the workplace has become a central element of vocational education in Finland; to ensure this, there has been continued support to co-operation between education providers and labour-market organisations. A permanent system of training workplace supervisors, drawn from among the senior workers at the training companies, has also been created. The

current plan for developing education and research for 2003-2008 (Ministry of Education of Finland, 2003) emphasises international exchanges, such as doing one's workplace training period in other European countries, and the recognition of previous learning. The wording of the Vocational Education Act of 1998 (Laki ammatillisesta koulutuksesta, 1998; Lakimiesliitto, 2000) foregrounds workplace experience as a component of learning. Trainees are called workplace learners, and workplace practice is called work-based learning. This approach affects also the way in which curricula are redesigned to promote learning based on work. The guidance involved in, foci defined for, and assessment of work-based learning are grounded on educational objectives set down in a curriculum planned and designed mainly by teachers who act, however, in collaboration with employers.

In Finland, the social partners contributed actively to the planning and implementation of the workplace learning periods included in initial vocational education programmes. Employers' willingness to help to smooth young people's transition from education to working life stemmed from their worries about the ageing of the Finnish population and about recruiting new qualified people. The government and the pivotal labour-market organisations have issued a recommendation in favour of work-based learning.

Internationally, industry and business is undergoing an unprecedented restructuring in preparation for the coming global economy. Resources are rapidly being shifted out of low-wage businesses and the commodity sector into higher value-added activities, such as finance and manufacturing, where advanced technology, knowledge and services provide differentiation and competitive advantage. This restructuring can be successful only if there is a well-educated, technically literate workforce (Thompson et al., 1996). It goes without saying that a new type of employee is needed for most of the industrial and business fields in this environment of constant change. Thus, what type of employee will be most suitable? And what kind of education can produce this type of employee, an employee who demonstrates, first and foremost, a willingness to adapt to change. Jamieson (1996), explaining the process where education adjusts to economic and business requirements, has identified and compared three models of this process, summarised in Table 4.1. Naturally, it is obvious that there are no clear-cut boundaries between these three models – they are ideal-type constructs.

Table 4.1 *Models of Education-Business Articulation* (Jamieson, 1996; Azizi, 1998.)

Model	Characteristics	Educational Perspectives
1. Traditional model	• Fordist conception of work • operating in small and medium-sized companies locally and regionally • mostly routine tasks, requiring medium-level skills • narrow specialisation, training in a single skill • workers are seen as compliant • expected to have the "right attitude"	• the curriculum emphasises numeracy, literacy and a small amount of technological skill • education stresses good discipline and respect for authority • facilitating the transition from education to work
2. Excellence model	• based on the practices of excellent companies • decline of unskilled tasks • emphasising high-level scientific and technical skills • operating on both national and international markets	• the curriculum focuses on high-level mathematics, science and technology • stressing a high level of competence in communication skills • emphasising traditional subjects and pedagogy • encouraging students to continue in higher education
3. Post-Fordist model	• focused on a few high-profile companies • flexible organisation of work and deployment of human capital • emphasising new working practices and policies • highly flexible manpower required • emphasising polyvalent skills enabling workers to do a wide range of jobs • less supervision of the work process, emphasising co-operation • workers expected to be able to solve complex problems and be creative	• requires a new schooling system • the curriculum emphasises not only mathematics, science and technology but also, as its main focus, information technology • foregrounding a new form of pedagogy • emphasising project work, teamwork and self-directed studying • teachers seen as facilitators of learning • stressing cognitive and contextual learning skills with a view to promoting transferable skills

Rationale for Education-Business Partnerships

What are the real motives behind the push for education-business links? What rationales are guiding policy makers who are optimistic and convinced about the outcomes of such partnerships? And what are the differences between this programme and other previous schemes intended to create a closer relationship between education and workplaces? In developing a mission for industry-education collaboration, it is important to make out the real reasons for this collaboration. Different rationales for education-business links have been identified from literature. Turner and others (1994) have highlighted four aims:

- achieving high and internationally competitive standards in key areas essential for a high-technology, high-skill economy;
- responding to changes in the nature of work and developing problem-solving and collaboration skills and the ability to work autonomously;
- satisfying employers' current perceived needs for improved basic productivity, nurturing qualities such as punctuality, attendance, and willingness to work;
- helping young people become not only creators but also educated critics of economic change (p. 8).

Similar elements, but with an emphasis on educational roles, have been brought up by Miller (1993). He insisted on curriculum enrichment, staff and institutional development, and on gaining mutual benefits from collaboration between education and industry. On the basis of the research, however, education-business links can be seen as playing an important educational role in pupil, teacher and curriculum development at the same time as they open schools to working life and the community as a whole. This trend can be speeded up if realistic timetables and objectives are worked out, if a tendency towards multiple innovation can be avoided, and if greater cohesion between government departments and initiatives can be achieved. It seems that there is no great difference between the missions of today's education-business links and past programmes of a similar kind. It may be that they are distinguished only by their economic circumstances, for example by being implemented in different eras such as Fordist or post-Fordist ones with their specific requirements and conditions.

In any case, the purpose of school-industry links is therefore clear. The objective is to create a more favourable attitude towards industry and to lend support to the

idea of an industrial dimension in the secondary school curriculum. The reasoning underlying this idea is probably rooted in an endeavour to improve young people's employment prospects during a time of economic recession. It is also hoped that the young will be able to develop a more positive attitude towards studying because they will see the new programmes as more relevant to their needs. What makes this process important, however, is that it is pursuing aims such as:

- improving pupils' chances of finding employment (for example through workplace learning opportunities);
- providing young people with a more relevant education;
- improving pupils' study motivation by contextualising teaching and learning;
- giving young people basic skills, knowledge and experience;
- helping them assess their potential, think realistically about jobs and employment prospects, and optimise their employability;
- enhancing their understanding of the work and social environment, internationally, nationally and locally, so that they will be able to grasp the variety of roles possible for them to play as adult members of society;
- encouraging them to become increasingly responsible for their own personal development and lifelong learning.

However, these objectives have raised a number of issues that schools must attend to. The main ones are the socialisation of the future workforce, training young people for employment, and the shift in young people's attitudes towards industry, which have been discussed by various people (Bates et al., 1984).

The Impact of Education-Business Partnerships

Education-business partnership refers to "long-term, mutually-beneficial relationships, based on commonly-agreed goals in which the needs for the participants are met through the joint sharing of one another's resources" (Warwick, 1995, pp. 171–182). The definition yields two crucial elements, "responsibility" and "accountability". It seems that these concepts are truly important for the success or failure of any effort to achieve common goals. For successful links, of course, it is necessary to gain the commitment of both educational institutions and companies. What is clear is that in the UK all levels of the educational system are, according to Warwick (1989), increasingly showing themselves ready and willing to do their part. For example, by 1995 92 per cent of secondary schools in Britain reported that they had regular links with industry (DFEE, 1996). In Finland, all vocational education establishments delivering TVET leading to recognised qualifications maintain partnerships with several enterprises and public-sector workplaces.

The greater need, therefore, is for businesses of all shapes and sizes to do their own part; and get directly involved with individual educational institutions at the local level to help them prepare young people more effectively for a changing world. This is the key message of education-business partnership. It is a working collaborative undertaking based on interdependence and mutual benefit. In this regard, there is again some evidence which demonstrates businesses' commitment to improving the quality of such partnerships. Studies by Turner and others (1994), Hillage and others (1995) and Miller and others (1995) have found that companies are now clear about the necessity of the process. For example, Miller and others (1995) show that among 50 companies, 58 per cent had a written policy for establishing and maintaining links with education with the aim of organising effective activities. This evidence does not, however, change the fact that unlike in the United States, co-operation between industry and educational institutions has varied between European countries. Industry influence on curriculum design has similarly varied from one country to another, and this has had an adverse effect on the real working skills of students entering employment after school.

However, partnerships between schooling systems and business may be capable of generating a range of benefits for all parties. Warwick (1989) has presented a comprehensive picture of those features which may make education-business partnerships more beneficial. These aspects are shown in Table 4.2.

Table 4.2 *Features of Education-Business Partnerships* (Warwick, 1989, p. 65.)

• willingness to negotiate	• joint delivery
• agreement on aims and objectives	• joint evaluation
• recognition of different benefits to all parties	• willingness to learn from each other
• shared activity	• honesty and trust
• sharing ideas and concerns	• compromise
• recognition of barriers, constraints, boundaries	• focus on mutual outcomes
• working together to overcome barriers	• collaboration
• joint planning and development	

Skilbeck and others (1994) have pointed out that partnership activities are likely to produce a number of demonstrable outcomes, including

> increased business involvement with, and support for, primary and secondary education; improved opportunities to assist students in school and college in the transition to work; increased volume, relevance and breadth of information and guidance offered to students by careers teachers and careers services; increased numbers of young people staying in relevant and appropriate full-time and part-time education; and finally, improved access to, and participation in, further and higher education (p. 220).

The reason why education-industry partnerships have a significant impact on a community as a whole is that the community benefits from the closer relations that such interaction between businesses and schools generates between schools and communities (Prais, 1989; Lasonen, 1999a). This may allow the community to play a part in reducing the number of untrained people who could become a burden on the community.

According to Warwick (1989), because the positive effects of school-business links are more obvious on the side of education, the responsibility for developing the related activities further rests, almost invariably, with schools. To be able to discharge this responsibility, it is very important that schools have clear objectives for industry involvement and strong arguments to persuade businesses to get involved. Business can benefit just as much as education. Fundamentally, education-industry links are geared to achieve better education, which is to the advantage of all parties (Moussouris & Green, 1993). However, while this may be a sufficient reason

for large companies to join in, it may seem rather too nebulous and long-term to be appealing to the majority of smaller businesses, whose interest it is vital to attract if all schools are to gain the volume and quality of co-operation they want. Thus, school-industry links need to be a two-way relationship, with both sides profiting. According to Warwick (1989), the benefits accruing from school-business links can be identified as follows: (1) a thriving economy; (2) informed citizens; (3) young people better prepared for the adult world, including increased pupil confidence and motivation; (4) development of new capabilities and skills; (5) development of new styles of teaching and learning; and (6) increased understanding of industry.

However, to obtain these advantages we may need to establish certain preconditions, as set out by Rosenbaum (1995) in his review of existing connections between schools and firms in Japan and Germany. His three requirements essential for an effective school-to-work linkage are:

- Employers value academic skills and invest in efforts to acquire them.
- Work-bound students put in effort because school performance is relevant to their future careers.
- Teachers have the authority to give students access to jobs and give employers dependable assessments of their students.

Despite many complex issues and uncertainties stemming from the nature of economic and educational ideas (Jamieson, 1996), it seems that education-business links might be developed further if the following measures are considered (Kairamo, 1989; Turner et al., 1994):

- generating a debate about education-business links that involves economists as well as industry and education;
- evaluating the longer-term learning gains from education-business links, and investigating possible economic consequences;
- concentrating on education-business links as a part of a long-term reform of the educational system;
- abandoning the notion of an "education-business curriculum" and concentrating on ways of integrating education-business links into other progressions, both subject-based and social ones;

- maintaining a central resource promoting developments in education-business links and their research and evaluation, which can be used to inform future developments;
- making research a part of educational development work so as to render development work more useful and less retrospective;
- ensuring that educational programmes have the support of industry;
- developing and updating partnerships between educational institutions and industry; and
- improving the continuous interaction between business and education.

In this context and with a view to providing young people with the opportunity to obtain a basic competence for an occupation, apprenticeship training in industry could be made an obligatory element of all secondary education, as it is already in Finland.

Education-Business Partnerships in Practice

Building education-business partnerships is not easy. It is a difficult balancing act and serious doubts have been raised about its effectiveness (Shuttleworth, 1993; Raymond, 1994). This is because, on the one hand, most studies in this field are descriptive rather than evaluative and because, on the other hand, they have no comments about the quality of the learning processes associated with these partnerships (Harris et al., 1997). Donald M. Clark, President of the National Association for Industry-Education Co-operation in the US, who is pessimistic about the efficiency of such co-operation, has pointed out:

> business-education partnerships – a term invented in the 80s by policy issue types who haven't spent a day in the trenches with hands-on experience in collaboration – have been a flop in terms of any impact on education .... The state of practice of business-education partnerships is fragmented, unstructured, uncoordinated, unconnected, duplicative, and conducted on an ad hoc basis (quoted in Shuttleworth, 1993, p. 30).

Clark's remarks may be too negative, but the actual fact is that compared with the huge investment in linking educational systems with business and industry, the

results are unsatisfactory to young people, companies and the other involved parties alike. The most successful examples are found in the UK and the US where, despite a remarkable amount of investment and the introduction of many schemes, school leavers still lack reasonable employment prospects. Therefore, it seems that reshaping and renewing the relationship between education and industry is still a debatable issue and that more research will be carried out on it in the future.

Finally, adopting speculative economic and business models which are changeable and ambiguous has led to a breakdown in the structure and stability of education as an important social institution. As Jamieson (1996) argues, education has the potential not only to take a leading role in social and economic restructuring but also to provide models for other organisations.

Linking Schools and Industry

The need to link schools with industry is neither a new topic nor a merely political issue. For some hundred years, schools have been urged to establish closer connections with business. Traditionally, there has been a well-defined separation between education (theory) and industry (practice), with few areas of common interest. Essentially, education equipped the student with a range of overall experiences and knowledge while industry trained them for the specific tasks that would be required of them when in employment. Stereotypically, educators were simply not interested in training their students while those in business were not concerned with the overall education of their workers (Milheim, 1991). Thus, each sector performed its own functions fairly well, with little or no communication between professionals working in the two areas. Consequently, while a conventional perception of the relationship between education (academia) and industry suggests a lack of rapport, some alliances seem to exist between these fields in a number of discrete content areas, especially where the connections are beneficial to all parties. Industry and education (schools) can work together in a number of ways for mutual advantage. Such linkages include general research support, co-operative support or knowledge transfer, and formal technology transfer.

Recent progress in collaboration between education and business, or what is called in many countries "co-operative education", has been boosted by a consensus on the importance, at all stages, of linking the process of learning to practical appli-

cation, preferably at a considerable remove from the classroom (Linklater, 1987). However, according to Warwick (1989), anyone concerned with designing connections between industry and education must not only recognise the existence of several links between these two domains but also understand how they may be interwoven to produce a variety of curricular patterns. Warwick believes that it is possible to identify, within any scheme of this kind, six such elements, aspects or dimensions (pp. 14–21):

- *The social element*: "Economic behaviour does not take place in a cultural vacuum." Industry and business is very much a part of the world in which we live. Thus, if the provision of education entails helping young people to understand society as it exists, then the industrial element cannot be ignored. It has to be seen as part of the wider culture to which we all belong and that our schools were created to transmit.

- *The economic element*: The varying historical relationships between education and the economy were a central theme in the 1970s and have remained very much on the agenda ever since. This is related to a nation's future prosperity and attempts to rectify a decline in this area through improvements in the curriculum and management of schools. Current moves towards greater accountability, encouraging industrialists to seek co-option as governors, and the emphasis on school management and staff development are all aspects of this process.

- *The vocational element*: This element is closely associated with the economic one, seeking as it does to prepare young people for the world of work, but is far more specific in its intentions. It attempts to ensure that each individual makes a suitable career choice and receives an appropriate preparation, both academic and practical, for it. Two sets of vocational skills, competencies and attitudes are involved here. The first set pertains to business in general, including, for example, communication, numeracy, problem-solving, screen/keyboard and interpersonal/life skills; a positive attitudes towards change, self-reliance, one's work, and co-operation with other people. The second set of required skills encompasses those linked to specific industries or occupa-

tional domains; to provide them, school must engage in work of both a diagnostic and a preparatory nature.

- *The affective element*: It has been seen how both the economic and the vocational element call for a range of interpersonal skills, developed largely through work of practical and experiential character. Learning of this kind is central also to affective approaches, but here the process becomes visible. Through such approaches children will be able to learn about industry; indirectly they will learn quite a deal about themselves.

- *The pedagogic element*: Here the emphasis shifts from considerations originating largely outside the school to those located squarely within it, and from the affective to the cognitive perspective. To be more precise, this element is rooted in the various areas of knowledge into which the curriculum has been divided. Such divisions – subjects, modules, themes, topics and so on – are, of course, artificial constructs created at a fairly high level of abstraction to enable pupils to comprehend the world around them more fully.

- *The instrumental element*: Here the approach is unashamedly utilitarian, subordinating every educational activity to what Skilbeck (1982) terms "the postulated requirements of a pre-established, adult-centred cultural system". This implies a methodology veering towards the formal, whilst the purest strain of instrumentalism leads naturally towards differentiated treatment of students on the basis of the functions they are destined to perform in their later life. Such differentiation may include some concession to social cohesion through pastoral groupings or a minimal form of a curricular "core", but this is likely to be balanced through regular testing for requisite skills and competencies.

However, as indicated by studies conducted in the US, programmes intended to improve the relation between schooling and business (work) could include the following three components:

- *work-based learning* involving a planned programme of job training or experiences, paid work experience, workplace mentoring, and instruction in general workplace competencies and a range of industry-specific elements;

- *school-based learning* around career exploration and counselling, instruction in a major career-related subject, a programme of study based on high academic and skill standards, at least one year of post-secondary education, and periodic evaluations of students and their academic strengths and weaknesses; and

- *connecting activities* that co-ordinate the involvement of employers, schools, and students, offer students work-based learning opportunities, and train teachers, mentors, and counsellors (Boland, 1995).

Historically, in the UK the process of "schools and industry links" has fallen into three categories:

- *Bridging programmes.* A study by Edgley (1978) which highlighted a gap between schools and industry showed that schools need to construct a bridging programme consisting of work experience, information provision, and social skills training. Thus, a partnership scheme in Leeds in 1983–1984 was introduced which attempted to do this. It described the last two years of compulsory schooling as a period of transition, recognising that pupils benefit from an increasing appreciation of their own neighbourhood, city, and wider environment, especially when there is an opportunity to take responsibility in real situations (Local Education Authority, 1984). This scheme emphasised such approaches as community education and service, residential experience for character building, problem-solving exercises, and training for literacy and numeracy.

- *Industrial experiences.* According to Jamieson (1985), the secondary school curriculum might be made to include a number of industrial experiences. It seems that pupils need to examine many aspects of contemporary life, such as industry and technology, leisure and employment, careers, community work, and arts and crafts. Pupils could also become participants in their own learning process by means of simulation exercises, role play, frequent visits out of school, and discussions with guest speakers. The Schools Council Industry Project (SCIP), which supports the idea of a number of industrial experiences built into the school curriculum, may stem from these ideas.

- *Personal development combined with work preparation*. The third category is described by Varlaam (1984). These courses pursue a number of different objectives: systematic training to meet the needs of local employers; personal development and self-realisation; community service; and training for economic awareness and self-sufficiency. Teaching methods include individualised learning, a negotiated curriculum, and self-assessment and learning by experience. Most of the people who have worked in this field have stressed the importance of work experience, visiting speakers, work creation schemes, self-generated employment, and mini companies (Watts, 1983; Varlaam, 1984; Jamieson, 1985; Miller, 1989; Miller et al., 1991).

Education-Business Partnerships in Finland: A Case Study of Networking Strategies

In Finland, young people's transition to work has been made easier through various methods of and models for offering training in practical work. The following have been found good practices that integrate individuals into society: (a) crafts and technology education within the compulsory schooling system; (b) apprenticeship training; and (c) other forms of vocational education grounded on a combination of school-based learning and learning at work.

In practice, finding workplaces where students can engage in work-based learning depends on networks between educational establishments and workplaces and on developing co-operation between schools and workplaces on a long-term basis. The central agents of such co-operation networks include the teachers, the workplace supervisors, the workers and the students. In the Bridge project, work-based learning posed also teachers and workplace supervisors new learning challenges (Lasonen, 1999a; 2000b). The teacher's work has acquired new elements that have broadened their job profile and enriched their work by requiring them to develop the elements of their profession, their pedagogic expertise, and their collaboration skills. Vocational teachers have become supervisors and planners, and coordinators of work-based learning. As a result, despite fewer teaching hours, in the Bridge project the teachers' overall workload seemed to have increased. The new demands they faced in and the greater variety of their work stemmed particularly from new learning and teaching environments, the responsibilities involved in the coordina-

tion of work-based learning, and more individualised study programmes.

Teaching, learning, the supervision of learning, and coordination-related responsibilities have been reshaping the teacher's role. In the Bridge project, the most immediate learning team comprised the students, the workplace supervisors and the teachers, all acting within the operational frameworks provided by the educational establishments and the workplaces. The teachers involved in the project saw the management of learning networks as a pedagogic challenge in the sense of requiring them to adjust to emergent collaboration with workplace supervisors.

In a study by Lasonen (2000b), both the workplace supervisors and the teachers saw the organisation of work-based learning as the most important development project shared between the educational establishments and the workplaces. The challenge covered not only student supervision and assessment but also training senior workers to serve as workplace supervisors and improving teachers' knowledge of the world of work. As the teachers and workplace supervisors see it, the primary task of co-operation networks is to provide students with work-based learning placements and monitor, supervise and assess their progress. Both parties emphasised the importance of reciprocal collaboration and mutual learning opportunities. They wished for well-defined objectives and rules to underpin their co-operation and network maintenance activities. The workplace supervisors hoped that the future would bring closer collaboration with the teachers on learning new educational, teaching and supervision methods and on understanding the students' background and aims. Many workplace supervisors lacked a clear picture of the training programme leading to the initial vocational qualification being pursued by the student or of the overall curriculum. Both the teachers and the workplace supervisors were concerned about the assessment of work-based learning.

A consideration of the data from the perspective of learning networks revealed starting points of networking and network-based learning. Networking between organisations representing production and business on the one hand and the state on the other generates a new action culture of vocational education. This aspect of work-based learning is discussed below in terms of three different networking strategies identified on the basis of the experiences gained from the Bridge experiment as analysed by Lasonen (1999b). An examination of the expectations associated with, objectives of and methods of implementing cooperation between workplaces and educational establishments yielded the following networking strategies (Lasonen, 2001):

- *Pedagogically oriented networking*. In this strategy the teacher directed and supervised the networking process along lines based on the curriculum. The purpose of the co-operation network was to provide students with training placements. The workplaces were informed about the curriculum. The students' personal study programmes were records and "translations" of the core curriculum. Working together with the students, the workplace supervisors converted their personal study programmes into work and learning programmes. Work-based learning was the subject of evaluative performance discussions at the workplaces between the workplace supervisors and the students and the workplace supervisors and the teachers. According to the findings of the survey, about half the students taking part in the Bridge experiment had a personal study programme to underpin their work-based learning. The parties' roles in the construction of the students' personal study programmes varied. A student's personal study programme was drawn up a) under the teacher's direction or b) exclusively by the student or c) in collaboration between the teacher and the student, with the resulting study programme being then presented to the workplace supervisor, or d) in collaboration between the student, the teacher and the workplace supervisor. Personal study programmes documented, among other things, the objectives, duration, scheduling and arrangements of each student's work-based learning activities and the procedures to be used in their supervision and assessment.

- *Learning partnerships*. This strategy derived its purpose and driving force from curiosity and the potential for mutual learning. The collaboration and learning team consisted mainly of the students, the employees and the teachers. The aim of networking between the education providers and the workplaces was reciprocal learning. In learning partnerships, the different parties discussed the topical issues of their respective contexts among themselves. The parties met as learners with differing action models. There was an endeavour to improve the match between education and working life and turn the workplace, through co-operation, into a locus of learning. The different parties solved multidimensional problems involved in work-based learning and its delivery by exchanging and reflecting on their experiences and by

developing, using an experimental approach, common principles and practices of action.

- *Networking to create new practices.* In this strategy the parties came together to test solutions to their problems and develop principles and practices of action through an experimental approach that could include also the students' end-of-course assignments. In their networking activities the various parties went, operating on their own initiative, beyond the boundaries of the educational establishment and formal education. They were actively creating learning opportunities that enabled them to develop as supervisors and teachers. The students were persuaded to accept responsibility for their own work, their learning programme and the creation of their learning networks. They made an active contribution to the construction and implementation of their study programme; correspondingly, self-evaluation started from objectives and targets defined by the students themselves. This approach was particularly suitable for fostering internal and external entrepreneurship.

These networking styles were not necessarily mutually exclusive; it was possible to apply several styles simultaneously. There is a natural tendency for different agents to adopt certain strategies. Workplace supervisors act on the basis of the operational principles of the enterprise, teachers according to educational objectives. Considerations specific to particular study fields and occupational domains can also affect the nature of networking strategies, but these factors have been passed over in this study.

This chapter has focused on the relationship between education and the economy on the one hand and, at a more concrete level, that between school, work and unemployment on the other. Throughout the ongoing debate on these relationships there is a tendency to foreground education as an important element in economic productivity on the one hand, and to blame the educational system and, more concretely, the schools for failing to produce school leavers who are fully equipped for the world of work on the other hand. Alternatively, there is a tendency to blame young people for lacking the skills, habits of mind and work experience that are thought to be required by employers. The next chapter will look once more at some major issues of TVET from the point of view of the developing countries.

CHAPTER FIVE

Technical and Vocational Education: Major Issues

Introduction: Concepts and Definitions

In this chapter we propose to discuss concepts and major characteristics, policies, models, and problems of technical and vocational education in an international comparative way. Particular attention will be paid to a number of experiments carried out in and cases from developing countries, which will be the focus of the chapter.

Apart from endeavours to plan the provision of post-compulsory education with a view to meeting specific occupational requirements, another common trend in educational policy in many countries are efforts to make secondary education more responsive to working life. The charge against these aspirations is that they tend to be dominated by "academic" concerns, displaying a concentration on knowledge for its own sake, discipline-based rather than interdisciplinary approaches, a lack of consideration to real-world problems and standards, and a failure to pay adequate attention to preparation for the needs of employment. "Vocational refers to those educational functions and processes which purport to prepare and equip individuals and groups for working life whether or not in the form of paid employment" (Skilbeck et al., 1994, p. 3).

In general,

> vocational preparation signifies the acquisition of skills, qualities, attitudes and knowledge that are judged to be important to entry into the world of work – either because the economy needs them or because the learner would otherwise be ill prepared to find employment within it (Pring, 1995, p. 187).

Implicit in vocational learning, therefore, is a view about how learning best takes place – practically and relevantly, with useful and specific goals in mind. It seems that education and training might be under wider control.

Accordingly, the purpose of vocational education is to give people opportunities to develop occupational competencies through sequential educational instruction and training appropriate for their abilities and needs. Cobb and Neubert (1992, p. 93) described secondary-level vocational education as intended to endow students with the following five broad competencies: (a) personal skills and attitudes; (b) communication and computational skills and technological literacy; (c) employability skills; (d) broad and specific occupational skills and knowledge; and (e) foundations for career planning and lifelong learning.

Generally, vocational education involves a programme where secondary students are helped to develop particular occupational skills through general and occupation-specific training. The overall goal of placing students in vocational education is probably to provide them with fundamental, academic, and employability skills in a vocational area of their interest that are useful in working life. Dowdy and Evers (1996) point out that traditionally, vocational education has been seen as the most realistic method of assisting persons in making the transition from education to employment.

At its Twenty-First General Conference session in Paris on 10 November 1989, UNESCO adopted a convention on technical and vocational education (TVE). Article 1 defines TVE as follows:

> Technical and vocational education refers to all forms and levels of the educational process involving, in addition to general knowledge, the study of technologies and related sciences and the acquisition of practical skills, know-how, attitudes and understanding relating to occupations in various sectors of economic and social life (UNESCO, 1989, p. 1).

This definition applies to all forms and levels of TVE delivered in public schools or through co-operation between schools and employers. TVE is understood to be:

- an essential part of a general education for all students
- a means of preparation for work
- an aspect of continuing education.

These definitions could be summed up in the form of the following conclusions:

- Most of them seem to show that the main purpose of TVET is to equip young people for the world of work while academic education qualifies an individual for post-compulsory education, including higher education.

- Different ways have been considered as suitable for preparing students for working life. Thus, an individual may be helped to acquire the skills required on the marketplace through school-based studies, co-operation between school and enterprises, or apprenticeship training.

- UNESCO's definition includes the concept of lifelong education, which can encompass a unified system of education instead of one divided between practical and theoretical tracks. Such a system also allows flexible transition between different levels of education and different study fields and between education and work. Therefore, this definition is more comprehensive than alternative ones.

- General education has been addressed in UNESCO's definition, but as the economy is going to make increasing use of high technology, with flexible, soft and portable skills becoming very important, it appears necessary to reconsider technical and vocational education with a view to emphasising liberal education. It seems that a liberal education element is one of the more prominently featured dimensions of new vocationalism.

The 30th session of UNESCO's General Conference in Paris in 1999, responding to the results of the Second International Congress on Technical and Vocational Education held in Seoul, updated the recommendations on TVE by renaming it TVET.

> These recommendations reflected the social, economic and technological developments affecting technical and vocational education, and formed a new vision of "Technical and Vocational Education and Training (TVET) for all throughout life" for the next century" (UNESCO 1999).

TVET emphasises individuals' lifelong learning and nations' preparation of human workforces competent to meet national developmental needs.

Discussions about vocational education and training in developed countries are complicated by these nations' extensive and diverse decentralisation policies, giving rise to several layers of funding and responsibility and involving a great variety of schemes and types of organisation engaged in the creation of programmes for equipping individuals for the world of work.

Parity of Esteem Between Academic and Vocational Education

In many advanced societies, technical and vocational education and training began with the central aim of preparing young people for employment by instructing them, at the secondary and post-secondary level, in manual skills needed in particular occupations. Progressively, this goal broadened to include considerations linked with national economic development or, more specifically, with efforts to reduce unemployment and improve productivity. Additionally, because of a growing disparity of esteem between general and vocational education the objective is now to achieve a balanced combination of academic and vocational experiences in the structures, common core curriculum, teaching provision and practices of TVET. Therefore, most developed nations have, individually and collectively, tried several approaches to tackling this problem and other emerging challenges.

In a research project on post-16 education strategies adopted within the EU, Lasonen (1996) and Raffe (1996) identified four reform strategies applied in the educational systems of eight European countries to promote parity of esteem between vocational and general education: *vocational enhancement, mutual enrichment, linkages* and *unification*. These four strategies were seen also as tools for analysing the differences and similarities between the reform strategies adopted in Austria, England, Finland, France, Germany, Norway, Scotland and Sweden (Lasonen, 1999b).

Vocational enhancement stresses the distinctive nature of vocational education on the basis of its characteristic content and links between employers and the providers of education of this kind. The German and Austrian educational systems are founded mostly on this strategy. It has enhanced vocational education and made it more attractive to potential students through measures which have maintained and

strengthened its distinctive ethos and its separate character alongside general education.

Mutual enrichment has brought various types of school, such as vocational and academic institutions, closer by encouraging co-operation between vocational education establishments, enterprises and upper secondary schools with the aim of providing students with a wider range of options and offering them stimulating learning methods and environments. The educational systems of Finland and Norway are examples of this strategy. It has enriched both vocational and general education through measures which allow each educational track to draw from the best features of the other one. The strategy has lowered the traditional barriers between these two types of education while still maintaining a distinct identity for each.

Linkage has sought to make vocational and general education formally more equal by connecting them through such measures as a common certification framework, arrangements for credit recognition and transfer, and common curricular elements. The English and French educational systems, which have been attempting to make their vocational education more attractive to parents and students, have adopted this approach. Traditionally in these systems, academic education has prepared upper-class and elite children and young people for high-status jobs.

Unification has been about merging vocational and general education into a single system of post-16 education. The educational systems in Sweden and Scotland are based on this strategy, where the goal has been to offer all students a core programme of common general subjects and abolish the distinction between vocational and general learning. The distinction between vocational and academic students and vocational and academic teachers, however, remains even after the administrative unification and modularisation of study programmes.

The aim of the first three strategies has been to maintain vocational and general education as educational tracks with separate identities. By contrast, the fourth strategy seeks to combine them into a uniform upper secondary education system (Lasonen, 1999b).

According to further analyses by Lasonen and Manning (2001), the relative degree of esteem accorded to vocational and general education respectively can be measured on the basis of three criteria: (1) the acquisition of core competencies through an integration of vocational and general learning contents in students' personal study programmes; (2) ensuring access to general and vocational higher education; (3) gaining the competence to cope with demanding skilled and profes-

sional work. Together these criteria constitute an ideal model whose starting points are the provision of a vocational education and training of high quality and its reciprocal articulation with other types of education.

Before vocational education can be said, in an educational system, to enjoy the same degree of esteem as general education, two conditions must be fulfilled. First, vocational education must meet the above three standards of high quality. Secondly, such esteem must extend to all occupations and to a broad sector of upper secondary education. Improving the standing of vocational education and training requires conscious endeavours to change prevailing attitudes (Lasonen & Manning, 2001). Altogether, enhancing parity of esteem between vocational and general education is a perennial goal that can be approached only by continuously improving vocational education and adapting it to new requirements. At different points of time, educational policies have stressed the development of core/key skills. From this perspective, reforms in Finland and elsewhere in Europe are responses both to external demands articulated by industry and business in particular and to the internal problems of these educational systems. There are many ways in which core/key skills can make it easier to integrate general and vocational education: they can be a part of a curriculum common to all learners, their aims can involve both employment and higher education, and they can foreshadow those more process-oriented conceptions of learning that may come to characterise the integrated curriculum of the future.

Comparative Aspects

TVET systems can be analysed and compared in a great variety of ways. Cantor (1989) described the following dimensions of comparison:

- the role of central governments in TVET
- the contribution of the private sector
- employer attitudes towards training
- the role of women in TVET
- the training of TVET teachers and instructors
- education and training and the needs of the labour market.

The Role of Central Governments in TVET

The role which central governments in the industrialised countries play in the development of TVE varies considerably. In Japan, the nature of and the contents taught in both the public education system and the public vocational education and training institutions have been set down largely by the central government, but public vocational education and training represents only about 2 per cent of the national VET provision, with most of it delivered by large enterprises. Public VET institutions are administered by the Ministry of Labour, not by the Ministry of Education. In continental Europe, the central state has, historically, had a much more prominent part in VET systems, both in terms of setting up and financing provider institutions and through the regulation of curricula and examinations (Green, 1995). In Germany, the federal government has considerable responsibilities regarding the provision of vocational education and training and is an important player in an administrative structure in which each of the major partners, including employers and trade unions, have a clearly defined contribution to make.

In the US, while supporting TVET is the responsibility of different states there are additional federal funds distributed according to a 5-year plan prepared by each state. However, the role of the federal government has diminished sharply in the last decade and today each state has a system of its own. In the UK, vocational education and training was previously administered by local authorities. Although the central government has, until quite recently, had relatively little to do with the VET system, it duties have been increasing in recent years (Gleeson, 1990). Today in England, the tendency for the state to withdraw from the provision of training has been accompanied by greater state intervention in the setting of training targets and standards and the establishment of national curricula. Relatively speaking, young people in England give training lower status than do their peers in Finland. Recently there has been decentralisation and more autonomy for Scotland and Wales, and the future may see the creation of regional assemblies and administrations for England and Northern Ireland. The general structure of education, training and qualifications are similar throughout the UK and closer to each other than any one of them is to the structure of any other EU member state.

Government intervention through regulation or the allocation of subsidies is ostensibly motivated by a belief that the training delivered by the private sector is inadequate. One area where governments in developed societies probably cannot

avoid taking responsibility is the secondary education system (Shackleton et al., 1995). However, it must be said that governments in different societies have acted differently in this respect. Greinert (1989) has identified three models for the provision of TVE characterised by different levels of government involvement.

- *Market model.* As described by George (1989), in the market model the government has a minor or no role in the vocational education process. The main characteristics of the model are best exemplified by the Japanese educational system. In Japan, students are university-oriented; the provision of technical and vocational education is determined by the needs of individuals and employers; its delivery, control and financing are the responsibility of the employers; and in-house qualifications are awarded by the enterprises themselves, preparing the individual to perform different tasks within the given enterprise.

- *Bureaucratic model.* Here the government has a large degree of responsibility for the planning, organisation and administration of TVE. The main characteristics of this model are a high degree of bureaucratisation; close connection between general education and TVE; comparability of educational standards and qualifications; and a marginal employer role. Sweden can be seen as a representative example.

- *Government-controlled market model.* In this model, a legal framework of conditions is set up by the government to regulate the activities of training providers. Characteristically, there is a high degree of co-operation between public vocational schools and private training enterprises and an extensive involvement of small and medium-sized enterprises. German TVE is organised in this way.

The Contribution of the Private Sector

The role of the private sector varies enormously from one country to another. For example, in Japan and the US it has an essential part and in the UK its importance is growing. In many European countries, by contrast, the private sector is a relatively unimportant player in the promotion of education and training (see Table 5.1).

These differences may be attributed to the different political philosophies underlying TVET policies in these countries.

Table 5.1 *Public and Private Expenditure on Education as a Percentage of GDP (= Gross Domestic Product) in 2002* (European Commission, 2005.)

Countries	Public expenditure on education	Expenditure on educational institutions from private sources in 2001
European Union	5.23	0.6
Japan	3.60	1.2
USA	5.35	2.3
Finland	6.39	0.1
Denmark	8.51	0.3

In the countries of the European Union, almost all educational costs are met from public funds, while in the competing countries, Japan and the US, a part of them is borne by the private sector.

Employer Attitudes Towards TVET

In Finland, employers are represented in the bodies overseeing upper secondary education because they take a long-term view of their own skills requirements. The arrangement works well mainly because of close connections between employers and their educational counterparts. Similarly in Japan, the development of the workforce within larger companies has been given a high priority by employers (Sweet, 1995). The government and the employers are placing a greater emphasis on the vocational training and retraining of the workforce. People's abilities are seen as important resources which must be fully utilised because Japan is lacking in basic raw materials. Employees are trained and retrained mostly by companies and corporations operating in Japan and the US.

In Germany, on the other hand, the fact that the costs of training are paid largely by training firms is symptomatic of a national attitude and tradition whereby employers expect, and are expected, to provide, for their employees, both initial train-

ing and, to a lesser extent, retraining and updating. Employers accept this obligation because of a perception that the mechanism benefits them by allowing them to use their control of training provision to foster good work habits and develop a highly skilled workforce. It also offers their employees social stability by giving them status.

Although some three in four employers in the UK have some sort of partnerships with schools, the country has, by contrast, had weakly institutionalised arrangements for youth transition (Brown & Behrens, 1996). The main reason for larger companies' reluctance to invest in training is a fear that the money thus spent may be lost because once trained, skilled workers may move to another company which does not offer similar training. At the same time, however, employers in Britain, France and Germany criticise the school curriculum and its organisation for inadequate and inappropriate student preparation for entry to work (Shackleton et al., 1995). The main complaints in some developed countries have concerned low standard of literacy and numeracy among school leavers; a tendency for schools to be overly academic and fail to equip students with basic educational skills; and a lack of communication and co-operation skills, essential for successful employees (Noah & Eckstein, 1988).

Women in TVET

The training received by women in many developing countries is increasing in importance because women's role in the national economies, as seen in the most developed countries, has expanded significantly in recent decades and seems set to continue to expand in the future (Shackleton et al., 1995). Although women's contribution to the economy, through their involvement in the workforce, has been growing steadily over the past two decades, in almost all countries they are restricted, or restrict themselves, to a limited number of occupations such as primary-school teaching, secretarial work and nursing (Dale, 1985; McKinnon et al., 1994; Shackleton et al., 1995).

In Japan, women tend to be employed in lower-level jobs in industry and business. In the US, the UK, Germany and France, despite a great deal of equal opportunities legislation, vocational education and training catering for women still mostly leads them to occupations which have lower salaries, less security and fewer opportunities for promotion.

This picture, which appears common among most countries, has been seen by human capital theorists as a rational response to what Polachek and Siebert (1993, p. 164) call "difference in life cycle labour force participation" because, perhaps, women expect to choose different educational paths and different occupations and to spend less time in the workforce (Shackleton et al., 1995, p. 229). However, things are changing, and younger cohorts of women are more highly educated and may be entering a wider range of occupations than previous generations. This means that they are likely to invest more in education and training and participate in the labour force to a greater extent generally. In the developing countries, because of traditional and cultural conditions, women still lack such a right to be seen as equals of men as recipients of education and workers outside the home. The developed countries, again, face challenges related to the equal distribution of resources such as salaries (see Table 5.2).

Income levels rise with levels of education. Upper secondary education is the turning point as regards gaining a higher and more stable earned income. Generally speaking, women earn less than men even when their level of education is the same as that of men. Even in those countries, such as Finland, where women are better educated than men, they are paid 25-30 per cent less than men.

Table 5.2 *Relative Earnings from Employment in 2002* (OECD, 2004.)

Country	Below ISCED 3		ISCED 5B		ISCED 5A		All tertiary education	
	Males	Females	Males	Females	Males	Females	Males	Females
Australia	85	85	116	114	160	114	145	142
Denmark	87	90	110	114	139	125	132	124
Finland	92	98	129	126	190	172	163	146
France	88	81	127	131	178	157	159	146
Germany	85	75	117	117	156	157	142	142
Hungary	81	77	205	143	252	180	252	179
Korea	88	69	105	118	143	160	132	141
Norway	86	83	142	149	139	141	139	141
Portugal	60	63	150	133	190	188	180	170
Spain	79	64	99	86	157	136	138	125
Sweden	87	88	114	116	158	139	146	130
United Kingdom	72	70	124	142	157	206	147	183
United States	68	67	120	122	202	185	193	176

Educating women seems to benefit the economy. Self and Grabowski (2004, p. 47) examined the impact of education on income growth in India over a period of 30 years. They found that the primary education of boys and girls had a strong causal impact on growth, but their evidence showed that at all levels, it is female education that has the potential to generate economic growth.

TVET Teacher and Instructor Training

Another vitally important aspect of vocational education and training in industrialised societies is the training and professional development of teachers of and instructors in technical and vocational subjects. Here practice again varies widely from country to country. For example, in Australia teachers in technical and further education colleges must take a professional training course, while in the UK such courses are not compulsory. Across the US, from state to state, there are considerable differences in such requirements. In Finland, vocational teachers must have job-level and management-level education and work experience (a minimum of 3 years) before being admitted to a one-year teacher training programme.

There is a serious shortage of vocational education teachers in some US high schools, which has resulted in a relaxation of the teacher training requirement in some states. In the UK, although some progress has been made in the provision of initial teacher training in colleges and industry, more investment is still needed in staff development.

Education and Training and the Needs of the Labour Market

As has been pointed out in previous chapters, quoting Wilson (1995), the competitive nature of the international marketplace and the rapid changes in the demands of the market resulting from technological change have intensified the need for flexible educational and training systems which are more responsive to individual circumstances and adaptable to the needs of the labour market.

It seems that the mutually distinct Japanese and German TVET systems are more powerful than those in other industrial countries. The following section will offer an in-depth description of the characteristics of these two systems, comparing their different models of schooling intended to prepare young people for working life.

Models of Schooling for the World of Work

Studies of the relationship between education and employment have distinguished various models for preparing students for the world of work. Even though it is difficult to draw clear lines between these traditions and it would be better to see them as representing a continuum, it is possible to highlight some major aspects of each pattern. According to Cantor (1991), the OECD identifies three models or patterns of vocational education provision for the 16-19 age group in the developed world:

- The schooling model emphasises full-time schooling until age 18, for example as seen in Finland, Sweden and Norway.

- The dual model involves a highly developed system of apprenticeship and continuing education in which there is close co-operation between education and business and industry. West Germany and Austria are the best examples of this model.

- The mixed (or scattershot) model comprises elements of both the schooling and the dual system, as illustrated by the United Kingdom and France.

In Western countries, three distinct systems embodied in the institutions responsible for offering vocational education and training for post-16 students have been described (see Green, 1991):

- An employer-led, work-based system of training through well-established apprenticeship arrangements. Germany and Austria are the best examples of this system.

- An education-led, college-based system in which general education and vocational training are offered in different institutions. France, Italy and Japan are instances of such an approach.

- An integrated system of VET similar to the second one except that general education and vocational education and training are integrated into a single comprehensive institution. It is best represented by Sweden and the US.

In another classification of patterns of vocational education Skilbeck and his colleagues (1994) distinguished between two models, a *schooling model* and a *working life model*. These models, seen as two different poles of a single continuum, stem from different answers of the following questions:

- How far should the educational system of schools and like institutions be involved in preliminary preparation for the world of work? How much and what sort of vocational education should this system provide? How generalised, foundational or specific should such educational provision be?

- To what extent should the component of formal and direct educational preparation for working life be delivered in schools and like institutions or at the workplace? Where and under whose authority should that provision be located? Where is such learning best achieved?

The schooling model is defined as placing primary responsibility for technical and vocational education with school authorities and as allocating the main portion of students' time to be spent at school or in some other institution of formal education rather than at the workplace. In the working life model, by contrast, responsibility for vocational education lies chiefly with employers or is shared between them and school authorities, and the major locus of vocational learning is at the workplace, supplemented with some off-the-job formal educational provision (Skilbeck et al., 1994, p. 64). In the above study, the American and Japanese educational systems were considered as illustrating the schooling model, the German dual system as exemplifying the working life model. Education in countries such as France, Finland, Sweden and Britain is located in the middle of the continuum defined by these poles. The educational traditions of these countries should perhaps be considered a mixed model. The data reproduced in Table 5.3 confirms this view (see also Table 2.2).

It seems that each one of these models has its own distinct characteristics reflecting its economic, traditional, and cultural backgrounds. This makes it practically impossible for one country to set up a complete copy of another country's model. For example, although the German dual system is one of the powerful ones in that it provides a vocational education stable in the long term (Skilbeck et al., 1994), the American approach would be likely to reject certain of its elements (Finegold, 1993).

Table 5.3 *Percentage of Full-Time Upper Secondary Education Enrolees in the 14–19 Age Group in Japan, France, Britain and Germany, 1988* (Medrich, 1994, p. 76.)

	Total upper secondary education enrolment			General education enrolment			Technical and vocational education enrolment and apprenticeship training		
Country	Total	Male	Female	Total	Male	Female	Total	Male	Female
Japan	94.0	92.4	95.7	67.5	64.9	70.1	26.6	27.3	25.8
France	84.9	82.8	87.1	37.1	30.6	43.8	47.8	52.2	43.3
Britain	76.9	74.7	79.2	63.0	62.2	63.9	13.5	12.1	15.0
Germany	118.1	123.5	112.5	24.0	23.6	24.5	94.1	99.9	88.0

Indeed, there is no question about the high calibre of the skills of the German workforce and the excellent quality of its system of preparing youth for employment, but a big weakness of the German strategy is the early specialisation of young students, which has been criticised by several researchers (Moussouris & Green, 1993).

Vocationalisation of Secondary Education

According to Skilbeck and others (1994, p. 4), the vocationalisation of education has two dimensions. First, it is an education for life, for existence where work, in one form or another, is a nearly universal element. With respect to this aim, vocationalism is a process or activity involving the imparting and acquisition of broadly defined skills and knowledge believed to have a discernible relationship with the capabilities needed for productive work and required of workers, now and in the future. Second, vocationalism is a function whereby the educational system operates to maintain the workings of the economy, deriving its purpose and rationale from an assessment of economic requirements, such as the labour market's need for a trained workforce.

As seen by Lauglo and Lillis (1988), the vocationalisation of secondary education means curriculum change in a practical direction. The Manpower Services Commission, National Economic Development Council (1984) and Cantor (1989) define vocational education and training as learning activities which contribute to

successful economic performance. Marklund (1988) interprets the term vocationalising of education as denoting all the measures within school and also measures involving co-operation between schools and the world of work where the aim is to prepare the individual for a future occupation and livelihood, whatever the social status of the job concerned.

However, the diversification of secondary education is being considered here in the context of both the developed and the developing countries. The main question that needs to be addressed is: why is there a wish to diversify secondary education? In international literature, a number of reasons and a variety of opinions have been put forward.

Employment Impacts

The vocationalisation of secondary education may be one way of responding to the challenge of reducing the high rate of youth unemployment experienced worldwide, particularly in the developing countries (Abrokwa, 1995). For example, during the last decade politicians in most developing countries have increasingly stressed the diversification of education with a view to introducing work-related skills as an integral part of the curriculum of schools at the secondary education level. They also believe that this may offer a partial solution to a range of social and economic problems facing their countries, particularly high youth unemployment rates and the increasing cost of public education.

A conference of African ministers of education held in 1976 came to the conclusion that education should be provided in their countries in a way that would maintain a close link between school and work and lower the barriers between manual and intellectual work, between theory and practice, and between rural and urban areas. They also recommended that the curriculum of both compulsory schools and higher education should include productive practical work as an essential component, to be implemented by offering TVET at all educational levels (Gustafsson, 1988).

As Lauglo and Narman (1988) have argued, the main goal of the diversification of the secondary-school curriculum is the provision of skills and the promotion of attitudes which will be useful in gaining a job. They added that in developing countries, emphasis is also put on the acquisition of attitudes favourable towards living and working in rural areas and on preparation for self-employment. However,

according to Al-Aaqib (1974), the main reason which has persuaded authorities to spend their small available resources on the expansion of academic education lies in political pressures, whereas what actually needs to be expanded is the field of TVE as a precondition of economic and industrial development. Therefore, rapid technological change has resulted in a shift in the nature of job requirements, which have made it necessary to design preparatory programmes that have both an academic and a vocational component.

It seems that it is, politically, often more advantageous to governments of developing countries to expand academic education and find every pupil a place there. Also, it seems that the vocationalisation of education will not solve unemployment problems without a good economic development strategy.

In Iran, inadequate surveys of unemployment across the whole structure of the labour market are one of the reasons why there is a lack of information in this area. The only official source of data concerning unemployment is produced by the Ministry of Labour and Social Affairs in the form of periodical updates on the figures for individuals who have been registered as jobless in different employment offices scattered in the main cities throughout the country. This does not cover all unemployed people. Since the early 1970s the rate of unemployment among school leavers has increased sharply.

In the mid-1970s the Ministry of Labour and Social Affairs expanded vocational and training courses with the aim of compensating for the shortcomings of secondary schools in the preparation of students for working life. These schemes have been reformed and restructured since the end of the Iran-Iraq War in 1988. Several factors are felt to be responsible for the high rate of unemployment among Iranian secondary-school leavers.

- As a country with a young population, Iran has faced increasing numbers of secondary-school leavers in recent years. Tables 5.4 and 5.5 show how enrolments in academic secondary schools have risen sharply, in the last three decades, from 405,009 in 1975/1976 to 4,027,452 in 2002/2003, while the figures for students in technical and vocational schools grew from 150,509 to 752,754 over the same period, amounting to a 894 per cent and a 400 per cent expansion respectively.

Table 5.4 *Academic Secondary Schools and Students in Iran, 1975–2003* (Ministry of Education of Iran, 1996; 2003.)

Year	Number of schools	Number of students		
	Total	Male	Female	Total
1975/76	1,557	268,042	136,967	405,009
1994/95	7,968	1,450,252	1,262,308	2,712,560
2002/03	18,372	1,959,339	2,068,113	4,027,452

Table 5.5 *Secondary TVE Schools and Students in Iran, 1975–2003* (Ministry of Education of Iran, 1996; 2003.)

Year	Number of schools	Number of students		
	Total	Male	Female	Total
1975/76	718	121,444	29,065	150,509
1994/95	1,095	178,811	49,430	228,241
2002/03	-	469,719	283,035	752,754

- The location and structure of business and industry and the service sector is another significant factor. Almost all companies in Iran have been state-owned since the 1979 revolution. Following the first five-year economic development plan, a policy of privatisation was emphasised which led to several companies and establishments being sold to their employees at the same time as many new companies have been set up by the private sector. Additionally, the most important factor in school-leaver unemployment is, probably, the static condition of the country's industry, which has expanded little owing to the reluctance of both foreign and local investors to lay out money, given the country's political instability particularly after the Islamic revolution, when war and certain foreign policies have been disturbing factors.

- The structure of the school curriculum has a remarkable impact. Secondary-school leavers' employability skills might also be taken into account here.

The argument is that the curriculum implemented in schools has concentrated on a range of academic subjects which cannot prepare students properly for the world of work. Although this curriculum changed superficially immediately after the revolution of 1979, the main structure is that which has existed since the Shah's time. In other words, it is not a curriculum designed to meet local community and national needs.

- The crises affecting the country's economy as the result of a long-term war and sanctions by Western countries and other socio-economic reasons are a further factor. However, there has been very good progress in the years of the first and second economic development plans (Aziz-zadeh, 1994; Shokohi, 1995).

Among developing countries, Colombia and Tanzania have had, in the 1970s, diversified educational systems similar to Iran's at the secondary level. Psacharopoulos (1988) selected studies carried out in Colombia and Tanzania to investigate whether the outcomes of a diversified education are different from those of purely academic and purely vocational schools. In Colombia the diversified schools, the INEM (*Institutos Nacionales de Education Media*), offer a combination of academic and pre-vocational tracks in a six-year programme with the same purpose. In the first two years, students study pre-vocational subjects to become familiar with the knowledge associated with and career options available in different trades. During their second two–year period they take vocationally orientated courses, for example in agriculture and commerce, as well as pursuing additional academic studies.

A strong emphasis is placed on vocational courses, which in the last two years can be devoted to further specialisation in metalwork, construction, electrical mechanics and the like, or students can concentrate on academic studies. Besides the INEM there are the CASD (*Centros Auxiliares de Servicios Docentes*), which offer special hands-on training in vocational skills considered important for students in the formal school context. The research in Colombia highlighted two sets of outcomes. Firstly, what is learned in school and secondly, what is mastered later in post-school, economic activity.

Using three sets of questionnaires targeting students, head teachers, and school leavers, the study focused on a comparison between the socio-educational inputs and outputs of this type of education on the basis of a longitudinal study of

- observable effects while students are in school
- observable effects one year after they have left school
- observable effects some time after their leaving school.

As regards the school leavers' initial destination, the results indicate that there were no major differences in post-school activities between students who had attended INEM and non-INEM establishments (Psacharopoulos, 1988).

Table 5.6 *Probability of Being in Full-Time Work in 1982 by School Type and Subject* (Psacharopoulos, 1988, p.14.)

Subject	School type INEM	Control
Academic courses	29.6 (39.1)	28.7 (28.7)
Vocational courses	28.1 (39.3)	33.7 (43.9)

Note: Figures in parentheses include those school leavers who are studying alongside working.

As Table 5.6 indicates, students coming from vocational schools are more likely to be employed one year after leaving school than students coming from other schools.

In Tanzania, the socialist government controlled both education and economic growth. For this reason, diversification of education has not been introduced simply in order to supply middle-level skills as a part of human resource requirements. In this country, the main motive behind educational diversification has been a commitment to a socialist philosophy which emphasised the ideals of productive work in education. In order to meet the skilled human resource needs stemming from the Tanzanian philosophy of self-reliance and self-sufficiency, it has been necessary to acquaint students with practical skills in addition to academic subjects.

In his study of the effect of vocational education on the employment of secondary school leavers in Tanzania, Psacharopoulos failed to find confirmation to the expectation that students leaving agricultural, technical and commerce-based schools would find jobs sooner after completing their studies than academic school leavers. His results showed that a year after leaving school, while 13 per cent of the students

who had finished academic programmes were still looking for a job or further education, for those students who had finished technical programmes the figure was 18 per cent.

In another study, carried out by the Division of Technical and Vocational Education and Training of the National Training Board of the Trinidad and Tobago Ministry of Education in 1982/83 to measure the labour-market performance of students completing diversified secondary school (Chin-Aleong, 1988), the outcomes were identified on the basis of the following questions:

- Do the students find jobs related to their original training?
- How quickly do they find employment?
- How do they compare with other school leavers in relation to their rate of placement?
- What are their earnings? What are their levels of job satisfaction?

The findings indicate that students leaving specialised crafts schools

- find their first job sooner after leaving school than students from other streams;
- are on average more satisfied with their jobs than other secondary-school leavers; and
- are better prepared for work than their fellow school leavers.

There are no significant differences between students completing the pre-technician, academic and specialised crafts streams in the speed of finding their first job, their satisfaction with their jobs, their preparedness for their jobs, and their earnings (Trinidad and Tobago Ministry of Education, 1983, quoted in Chin-Aleong, 1988, pp. 293-333.) Generally, the results support the findings from Colombia and Tanzania in that the expected outcomes have not been realised. Of course, many additional factors may be contributing to these findings; including, for example, the overall design of the study and the time spent collecting the data in the case of Colombia.

In a study in China of secondary TVE school leavers, Min (1987) concluded that students completing TVE schools are in jobs closely related to their original training and that they are more productive than general senior high school leavers holding jobs of the same type. In his opinion, the better technological and psycho-

logical preparation for employment provided on TVE programmes have led to a higher level of satisfaction among TVE school leavers and that the specific technical skills acquired by them have matched the skills requirements linked with their jobs.

Several studies have been conducted in industrialised countries to pinpoint the effects of TVE on labour market outcomes. Wages, the number of job changes, employment rates, job satisfaction, and satisfaction with educational preparedness for labour experience were all used as indicators of labour market outcomes. Examining the effect of vocational education on employment outcomes among non-college-bound high school leavers in an urban school district in the US Rocky Mountain Region, Shananan (1989) concluded that no significant relationships exist between credits earned in vocational education and hourly wages, the number of job changes and job satisfaction.

Shanagan's results indicate that school leavers employed in occupations related to their vocational training earned significantly more than their peers working in occupational areas unrelated to their vocational training. Additionally, a positive relationship was found between credits earned in vocational education and satisfaction with high-school (upper secondary school, ISCED 3) preparation for work. The respondents entering employment after leaving high school considered English, mathematics, vocational education and social studies as useful to their jobs.

In a study of selected school districts in Texas, USA, Carter (1989) discovered that firstly, vocational education has a significant effect on wages. The wages of vocational programme completers were significantly higher than those of their non-vocationally trained fellow school leavers. Secondly, many vocational education programme completers have an unemployment rate that is significantly lower than the equivalent expected national rate. For example, the unemployment rate for auto mechanics programme completers was 14.4 per cent while the equivalent national rate was 16.3 per cent. And thirdly, the drop-out rate for vocational education students was lower than for non-vocational education students. These results have been confirmed by Miller (1990), who learned that high-school vocational training was seen as a positive factor in vocational secondary school leavers' current jobs. Also, Garrity (1989) found that vocational programme completers in rural Northwest Pennsylvania earned more than academic programme completers. In contrast, Wilms (1988) has pointed out that "little persuasive evidence exists that high school vocational programmes, compared with other high school programmes, pay off in placement and earnings" (p. 88).

Very briefly, the findings from relevant research on the labour market outcomes of different types of education in the developed world are inconclusive. Some studies indicate that vocational-school leavers earn more and are more productive while others show either no differences or negative results in comparison with students finishing an academic general education. Similarly, research carried out in the developing countries reveal no significant differences, but most of the results tend to be negative. This may be attributed to low economic and industrial development resulting in few employment opportunities and in many problems with the content of technical and vocational education in these countries. However, levels of general or/and vocational education do affect employment opportunities, as is shown in Table 5.7.

Table 5.7 *Employment Ratio (%) and Educational Attainment in 2002* (OECD, 2004.)

Country	Lower secondary education		Upper secondary education (ISCED 3A)		Tertiary education with a practical/ occupationally specific orientation (ISCED 5B)		Tertiary education with a theoretical orientation (ISCED 5A)	
	Males	Females	Males	Females	Males	Females	Males	Females
Australia	72	51	85	64	87	73	91	81
Denmark	73	52	84	71	88	86	92	84
Finland	61	54	77	72	84	83	89	85
Germany	65	45	63	54	84	78	88	80
Greece	84	42	83	45	81	73	88	76
Hungary	46	35	79	66	-	-	86	78
Iceland	92	82	91	84	95	92	98	94
Japan	79	53	89	60	94	62	94	68
Mexico	95	48	-	-	82	36	67	23
Poland	46	32	74	61	80	69	87	82
Portugal	88	77	85	80	84	78	93	90
Sweden	80	69	83	80	85	83	89	88
Turkey	78	17	81	26	-	-	83	65
United Kingdom	59	48	88	77	88	84	90	86
United States	69	49	80	68	86	77	89	79
OECD average	73	49	83	66	88	76	89	78

Employment rates rise with levels of education. In most countries, employment rates, particularly women's, are low among those with an education below the upper secondary level. The better educated women become, the more the employment differentials between women and men even out. The difference between women's and men's employment rates is 23 per cent among people in employment with lower than an upper secondary education. Among people with a degree the difference is 11 per cent (OECD, 2004, p. 14).

Irregular Supply of Skilled People

The diversification of secondary education has been mentioned also as a response to national needs regarding the supply skilled people. Chrosciel, (1989) argues that

> a continuous but regulated supply of different types and levels of well-trained and skilled human resources is one of the essential prerequisites to economic and industrial development. It has long been recognised by industry, crafts and commerce that vocational training is in itself an investment, as the quality and standard of goods produced and of services rendered depend to a large extent on the level and degree of skills that the staff involved possess (p. 41).

Education and training, when properly administered, can play an important role in facilitating adaptation to structural changes in the economy and in helping to equalise employment opportunities.

In Iran, unfortunately, in addition to a lack of vocational elements in general secondary education, the educational system is not able to provide a well-organised liberal education. Further, the technical and vocational programmes, and the vocational training delivered at the secondary-school level are not equipped to produce a qualified and skilled workforce to meet the needs of national development. This problem is common among other developing nations. The shortage of skilled and semi-skilled people in the workforce has been discussed in a range of studies (Middleton et al., 1993).

Such a lack of qualified labour at the different levels of skills requirement was the main reason why the previous national socio-economic development plans failed to achieve their anticipated outcomes. The consequences of this problem forced the government of Iran towards two policies. First, an emphasis on employing foreign

workers, which intensified after the 1973 oil crisis. Second, stressing investment in human capital, which in 1983 placed Iran first among the top five developing countries to send students to study abroad (Coombs, 1985).

The 1983 international symposium convened by UNESCO to discuss the transition of technical and vocational school leavers to work concluded that vocational and technical education and training in the Third World countries was suffering from the following problems, which could be contributing to a shortage of skilled and semi-skilled people on the labour market.

- No technical or vocational exploration, preparation or training is offered below the secondary-school level.

- Vocational workshops are poorly equipped. It has been mentioned above that there is a shortage of equipment and other school facilities. The failure of secondary schools to gain their objectives is due to a poor school environment. Schools lack proper libraries, laboratories, workshops and the like.

- A lack of qualified vocational and technical teachers and trainers is an important factor in the failure to reach educational goals.

- The skills taught in vocational and technical schools are irrelevant to the needs of the labour market. The gap between the curriculum and technological development is unreasonably wide. Academic subjects occupy most of the timetable. There is no link between school and industry in particular or with the community in general.

- Responsibility for planning the operations of and administering technical schools and vocational training centres is scattered among different agencies.

- There is a lack of interest in this kind of education among students and their parents because of their belief in academic education as providing access to high-status occupations.

Ebtekar (1994) highlighted the same problems regarding technical and vocational education in Iran. A range of similar problems were identified by Fafunwa and

Aisiku (1982) in African countries, by Shehab (1987) in Bahrain, by Van Steenwyk (1987) in Honduras and by Davis (1991), Buechtemann (1994), Simmons (1994) and Abrokwa (1995) in other developing countries.

Most of these problems are aggravating the ineffectiveness of the educational systems in these countries in producing qualified skilled people. We can add to this a lack of human resource forecasting which has resulted in an imbalance among school leavers from different fields of study and in courses and study fields irrelevant to regional and local economic environments. This problem stems from centralised curriculum design where no attention is paid to regional differences.

Social Impacts

It is believed that the existing academically oriented educational system is generating inequality between the small elite groups who have been successfully educated and those who, for different reasons, failed to complete their studies. In Iran, where only a small portion (about ten per cent) of secondary-school leavers has the opportunity to enter higher education, the problem of inequality is obvious. Although intake into higher education increased dramatically in the last two decades, from 35,000 students in 1983 to about 300,000 in 1995/96, the total number of university students has grown from about 120,000 in 1983 to 1,200,000 (including the non-profit Azad universities and non-attendance universities) in 1996.

Despite this growth, the vast majority of school leavers will still have reached the end of their education when they finish secondary school. The question is whether the diversification of secondary education will make for more equal access to higher education among students from both the academic and the vocational streams. It remains to be seen whether the recent reforms in the structure of secondary education will enable all students, irrespective of their study programmes, to enter the tertiary education system. Also, it is expected, for traditional and religious reasons, that female students will be concentrated in certain fields of study and that fewer women will take up technical and vocational programmes. As Tables 5.2 and 5.3 in this chapter show, the number of girls in technical and vocational schools is 49,430, and almost all of these are attending home economics, clerical and commercial programmes as compared to 1,262,308 girls pursuing academic studies.

Educational Impacts

There is a tendency to believe that technical and vocational education is among the types of provision suitable for academic low achievers, so that less academically able students may be channelled into vocational and technical tracks, while students with high ability may be selected for academic tracks (see King, 1993). This may be the reason behind the practice of assigning students to different tracks in Iranian secondary schools. The custom may have been sound when students needed to be prepared for specific and simple jobs, as many jobs were in the past, but is not necessarily valid any longer. Rapid technological change has created a need for occupations which cannot be pursued without a combination of both academic and vocational education.

After a reform implemented in 1991 Iran's secondary education system has, on the one hand, put emphasis on providing all students regardless of their ability level with any facilities they may need. A new branch of Kar Danesh (skill education) has, on the other hand, been created to help those students who are unable or unwilling to continue their studies after secondary school. However, this strategy fails to answer three questions: How will students be selected for different streams? How can we change the negative perceptions that students and parents have of technical and vocational education? How can the curriculum be designed so that the theoretical and practical elements are integrated into each other? Of course, the practice of sending the academically less able students to technical and vocational tracks has also contributed to the poor performance of students from these programmes on the labour market and to their lower scores in the final examinations for entry to higher education.

Parents' and Young People's Attitudes Towards Work

One of the crucial factors in the failure of technical and vocational education in most developing countries are negative attitudes among students and their parents. Therefore, in Iran the Ministry of Education and other related agencies have a great responsibility to change such attitudes. For this reason, during the implementation of the second five-year plan the Ministry of Education has given additional financing to certain special programmes and projects intended to improve parent's ideas of these fields. A study by Lauglo and Norman (1988) of how technical education

has influenced Kenyan secondary-school students' aspirations and expectations concluded that positive parental views of TVE have helped to make students interested in technical or practical work as a future career.

Reluctance to Invest in TVET

Even though the focus of the vocationalisation of education, particularly of secondary education has, even in developed societies, been on solving the problem of school-leaver unemployment, until recently governments have been reluctant to invest in vocationalising secondary schools. This may be attributed to some or all of the following reasons.

First, introducing practical subjects into schools is very costly, especially when they are to be initiated quickly and on a large scale. It can be easily seen how big an outlay it entails for a country like Iran which wants to make these courses available to a population of three million secondary-school students. The expense is high because the equipment, materials, curriculum development work, teacher training, personnel and management resources and maintenance required to bring about the changes do not come cheap. Also, there is the high cost associated with the small class sizes required for pedagogical reasons (Dunham, 1989).

Second, four decades ago UNESCO's curriculum guidelines dropped occupation-specific education in schools (Dougherty, 1989; Bowman, 1990). Similarly, changing patterns in World Bank investments in vocational education and training provide some evidence to suggest that all types of job-related training have been difficult to establish in low-income countries (Middleton, 1991). In his review of 22 middle-income countries Middleton (1988) listed Brazil, Jordan and South Korea as having developed an effective industrial training system comprising formal and informal secondary and post-secondary education. The same conclusion was drawn by Psacharopoulos and Patrinos (1993). These TVET systems are considered productive. Their productivity is reflected in school leavers' ability to find employment, high internal efficiency in comparison with other similar countries, and employers' high degree of satisfaction with school leavers. These systems can be seen as examples of successful practice in developing countries.

According to Middleton (1988; 1991), Middleton and others (1993) and Haas (1994), in order to achieve effective and successful practice in TVE in developing

countries it is essential to take close account of the following considerations: long-term perspectives and multiple investment; expanding industrial employment; small-scale beginning and incremental expansion; responsive planning; early and continuous involvement of employers; evaluation of policy and management capacity to match system complexity; more attention to alternative financing sources; investment in quality; and flexibility in the curriculum and institutional design.

Third, perceptions are common within Iranian society of TVE as having low status. Where students and their parents have such a view, students are reluctant to pursue this line of education, feeling that it will lead them away from higher education and high-status occupations. A number of researchers have commented on factors which impinge on the status of technical and vocational education and in some cases proffered solutions. Many studies have noted the low esteem in which TVE is often held, reflected in the attitude of students and potential students, their parents, employers, professional bodies, teachers, the government and educational administrators (Haas, 1994). Thus, there is a feeling in Iran and other developing countries that TVE is a second-class education with no valuable end point. Accordingly, there has been an apparent reluctance among students to enrol in TVE programmes in school. Academic studies have been regarded more highly than TVE, which has been seen as low-status education leading to blue-collar jobs.

Fourth, academic requirements for entry to higher education make it difficult for vocational and technical school leavers to gain access to tertiary institutions. The existing procedure for admissions to all higher education institutions takes account only of success in academic subjects. Although most of the study time in vocational and technical schools is devoted to technical subjects, students are not provided with any strong academic foundation for technical subjects. In Iran, the university entrance examination is a competition based on academic performance, meaning that TVET students have little opportunity to secure places in higher education. For example, the 115 university students who returned the questionnaires used in this research included only one student who had completed a technical or vocational school. The question which needs to be addressed here is: How can we expect students and parents to choose such an education as an option?

Rossetti and others (1990) found that the main reason why students do not enrol in vocational education is the conception that this excludes them from subsequently taking other vocational programmes and higher education programmes. Similar views were mentioned by Price (1985), Plihal, Ernest and Rehm (1986) and

Fratz, Strickland and Elson (1988). In the US, the Back to Basics movement recommends that the academic requirements of public high schools and training institutions should be strengthened. Marie (1988) believes that this would have a major effect on secondary vocational education programmes because there would not be room in the curriculum or in the schedules of individual students to accommodate both academic and vocational elements.

He went on to argue that several reports by prestigious groups on American educational reform and improvement, for example *Nation at Risk* (1983), the Carneale Report (1983), *Academic Preparation for College* (1983), the Paldela Proposal (1982), *Tomorrow's Teachers* (1986) and *What Work* (1986), all assume that the most suitable way for preparing all students for life is to add more academic courses to the curriculum. The Back to Basics movement has left educators faced with many unanswered questions. Shanahan (1989) listed some of them: How can a curriculum be designed to meet the diverse needs of all students? How will the increased academic requirements affect participation in vocational education?

Marie (1988) suggested the following as possibly workable means of providing, in vocational and technical education, a reasonable balance between academic and practical subjects:

- The need to balance the academic and vocational programme should be clearly stated.

- Vocational teachers should be trained to have the skills to integrate the practical and academic aspects of different subjects.

- Attention should be paid to the recruitment of quality students.

- The necessary changes in the curriculum should be calculated to make time available for vocational subjects. Emphasis should be placed on attitudes towards work rather than on training for specific skills. Technology should be an essential element in any vocational programme.

- Vocational teacher training programmes should be designed in a way that will produce technology-oriented teachers with skills in computing, in teach-

ing conceptual and abstract thinking, and in how to incorporate basic subjects into the vocational classroom. A similar view was expressed by Phelps and Hughes (1986).

Fifth, the availability of well-trained practical subject teachers is crucial, as is investment in the education of teachers well ahead of any change. Teachers of TVE subjects should be carefully trained and should have, at the same time, industrial experience. Research by UNESCO in Asian countries indicates that almost every country in the region had some problems with the supply of TVE teachers (Haas, 1994). In Iran, the lack of qualified technical and vocational teachers is one of the biggest obstacles hampering TVE (Ebtekar, 1994). Such teachers, with the relevant skills and experiences, are not readily available.

To remedy this lack, in-service training could be introduced to help existing teachers gain industrial experience and update their skills. Full-time courses could be introduced to produce technical and vocational teachers for the country's long-term needs. But this may lead to two problems. Either the trained teachers must be paid more to keep them in the profession or, if salaries remain unchanged, they will leave to work in industry and as self-employed practitioners. To attract technical and vocational teachers, different types of incentive are essential. These may be in the form of higher wages, scholarships to study for higher degrees, or incremental promotions.

Sixth, the experience of other developing countries which have vocationalised their secondary schools has brought to light some related problems. It may be useful to review these problems because it allows policy makers to consider them as they develop their own educational systems. For example, Tanzania, Colombia, Zimbabwe and Sierra Leone show that the results expected from the diversification of secondary education have not materialised (Lauglo & Lillis, 1988).

Similarly, in his study of curriculum diversification in Tanzania and Colombia, Psacharopoulos (1988) presents evidence that the stated objectives of the diversification of secondary school curriculum in these countries were not achieved. His findings indicate that there is no difference in job prospects between academic and diversified school leavers; students tend to change their fields of specialisation when seeking further training; diversified school leavers did not earn more than academic school leavers; and diversified schools are more costly than academic schools.

In the case of Sierra Leone, several features of project design and implementation have had an important impact on the outcome of the projects carried out with the involvement of the World Bank. These are listed by Wright (1988) as follows:

- There was too much concentration on civil works and equipment at the expense of programme development and personnel training. Little consideration was given to the content of the diversified curriculum.

- Basing the project in prestigious schools with good academic-stream records and in politically favoured regions meant that there was limited acceptance for the project.

- The training of technical and commercial teachers was neglected.

- When attention was paid to the content of diversified programmes, greater confusion ensued because of the discrepancy between the technological training (e.g. design technology) of the teachers and a syllabus focused around traditional crafts.

- In some schools, the equipment supplied was not installed for years because there were no skilled people to do it, while other schools with skilled teachers did not receive the equipment they needed.

- No arrangements had been made for the maintenance and repair of the equipment.

- A lack of consumable materials (wood, metal etc), of which there was assumed to be a regular supply, resulted in excessive teaching of theory in subjects which were intended and assumed to be practical.

- Schools were given no guidance on selecting what has to be taught as a part of the diversified curriculum. This led to different schools selecting different subjects and left schools with no help to develop the content of each subject area.

Structure and Organisation of TVET in Iran

In Iran the term "technical education" is used interchangeably with industrial education to refer to the preparation of students for working life at the secondary-school level. Technical education is delivered in separate schools, each of which provides a curriculum specialised in one field of study. Thus, there are technical and vocational schools (Honarestan Fani va Herfaee), business services schools (Madrasae Khadamate Bazargani), and agriculture schools (Honarestan Keshavarzi), each of which is under the administration of the Ministry of Education and which place more emphasis on practical than on theoretical subjects (Aziz-zadeh, 1994). As a part of the reformed system whose aim is to balance general education and TVE, the Ministry of Education has established a new branch of vocational education called "Kar Danesh". This programme has replaced the Kad Project, a work experience scheme, which catered for pupils at high schools (Ministry of Education of Iran, 1996).

The term "vocational education" is employed to speak about education and training for a specific occupation with the focus away from its theoretical aspects. The technical and vocational training centres providing vocational education are under the control of the Ministry of Labour and Social Affairs (Ministry of Education of Iran, 1996). In higher education, only the term "technical education" appears when talking about applied and engineering programmes. "Vocational education" is not a common expression at the post-secondary level in Iran. Shokohi (1995) argues that what is taught in most technical and vocational schools in Iran cannot by any means be considered technical education because these schools familiarise their students only with essential principles relating to the field of "industry", "agriculture" and "commerce" without properly qualifying and training students for the world of work.

Thus, in Iran technical and vocational education is delivered at three levels, as follows:

- Non-formal technical and vocational training is under the supervision of the Ministry of Labour and Social Affairs. The primary aim is to train individuals with minimal formal education (usually primary education) for manual work and other relatively simple jobs. The training programmes vary in duration but are usually short (a few months).

- Formal technical and vocational education is supervised by the Ministry of Education and also by the Ministry of Culture and Higher Education. This type of provision can be substituted for formal secondary education. The curriculum of TVE schools and colleges offers two-year programmes leading to a qualification in a variety of major subjects needed in industry and commerce and in agriculture.

- Formal higher technical education is under the supervision of the Ministry of Culture and Higher Education. The programmes involve two years and four years of study after the completion of secondary-level education, leading to bachelor degrees in a range of technical fields. (Ministry of Education of Iran, 1996.)

The UNESCO and ILO frameworks for curriculum development have been incorporated into the recent educational reform. It seems that the five-year plan for TVE schools makes available two major choices:

- General technical education: participants receive three years of training in a technical field, delivered in schools and supervised by the Ministry of Education.

- Specialised technician education: participants spend three years in TVE schools administered by the Ministry of Education and two years in technical colleges specialising in fields such as power, roads and transport, industry, telecommunications and so on.

The major weakness of contemporary training policy in Iran is perhaps that it neither specifies skills training nor provides an adequate general education. Thus, under present conditions the young lose out both ways; on the one hand, they fail to acquire knowledge and understanding, however broadly defined, that would allow them critical insight into the political or economic workings of society while on the other hand, they are inadequately equipped to meet the practical requirements of working life. It is perhaps not surprising that the expansion of vocational training has resulted in inferior general education, without the employment prospects of young people altering much one way or the other.

One effect of TVE as it is provided today is that it can force the young to settle on their vocational training and employment options too early, in many cases before their fourth year at high school. Despite the publicity given to the core curriculum and training in transferable skills, early specialisation restricts the choices open to young people later on in life. Consequently, lacking a broadly based general education, students are most unlikely to be able to benefit from forms of training that they have not been educated to absorb. The danger is that Iran's youth are fast becoming overtrained and undereducated, and this at a time when the general education base of most industrial nations is broadening rather than being narrowed around "skills" training.

General Secondary Education in Iran

Secondary school (4 years) caters for ages 14–18. Although, according to a report by the Ministry of Education, in 1991 the upper secondary education enrolment ratio was about 43 per cent for boys and 32 per cent for girls, this level of the educational system is a problematic area for the government. An increasing number of applicants for higher education, high unemployment amongst school leavers, the lack of a relationship between education and the labour market, a lack of sufficient skills and applied knowledge, and a strong emphasis on academically oriented courses forced it to make a reform of secondary education the first priority in the Education Act of 1991.

In the reformed secondary education system, the most important aim is preparing students for employment by providing more and better facilities and materials and even extending and improving the structure of the system. Therefore, in addition to reorganising the whole system, consideration has been given to developing those courses which require technical and vocational training, enhancing the provision of work experience and establishing more links with the economy. A new technical and vocational programme, Kar Danesh, has been created which includes both applied and general education.

The new secondary education programmes have been shortened from four to three years, with students who finish these three years with a good mark allowed to proceed to a one-year pre-university course. Improvements have been made also to the previous technical and vocational education system, now based on five–year

programmes. This period includes two years of college studies and leads to a higher education certificate. This may raise the social status of technical and vocational education and will also motivate parents to send their children to education of this kind. The new secondary education system is currently on trial, and more time is needed before its outcomes can be judged.

Although there is not much evidence that technological change has made for dramatically higher skills requirements or that improving the skills of the workforce will by itself make the economy more productive, it is difficult to dispute much of what the advocates of apprenticeship training have to say about the shortcomings of Iranian schools and their failure to prepare high-school leavers for work. Today's high schools do not do a very good job in this respect because they engage the majority of students in academic learning. Nor, except for those headed for higher education, is there much of a relationship between what happens in the classroom and the jobs students get when they enter the labour market. One result is that many students have little incentive to study hard or achieve in school. Instead, they drop out or else simply put in "seat time" until they finish their schooling.

For these students, a work-based education programme like an apprenticeship does indeed seem to offer a much-needed alternative to the academic orientation of the high-school curriculum. There is some evidence, for example, that students are bored with those academic and other types of general intellectual skill which they need most both at work and in social life.

Advocates argue that apprenticeship training will create a learning environment that provides for the development of both specific and general skills. However, rather than broadening the character of the curriculum to meet the needs of a diverse student population, the introduction of work-related programmes has served, over the years, to fragment the curriculum and deepen the division between students in academically oriented and non-academically oriented programmes. In fact, many of those who have studied the history of vocational education contend that work-based education has done little to bring practical and academic education together or eliminate the gap between those bound for work and those bound for higher education. Much more often, they tell us, vocational education has fostered a differentiated system of schooling, with low-income and minority boys channelled into industrial education programmes, low-income and minority girls channelled into traditional female programmes and occupations, and white middle- and upper-class students guided towards academically oriented programmes.

At the same time, there are those who contend that the reform will actually make Iranian education more efficient. As they see it, explicit provision for TVE will create more opportunities than the existing system, which tends to give every student access to the same education but in reality provides many students with little useful training at all.

In the end, if there is a positive approach to refashioning the relationship between education and work, it does not involve subordinating education even further to vocational concerns, as an apprenticeship training system ultimately proposes to do. A more democratic alternative for a changing economy is to provide all students with skills of the kind they need in order to develop fully as individuals and cope with technological development. This means offering them an education that will equip them not only with specific vocational skills but, in John Dewey's (1916) words, with the "initiative, ingenuity, and executive capacity" they need to be "masters of their own industrial fate." Such an education is not sufficient by itself, however. It is also necessary to develop schooling and economic policies that intervene more directly in labour markets rather than focusing exclusively on education and training.

This chapter has concentrated on some major issues involved in technical and vocational education in both developed and developing countries and its structure in order to highlight relevant problems and experiences and offer Iranian policy makers insights that will help them to reform and improve the country's secondary education system.

Discussion and Conclusions

Education and training systems and the practices associated with them are shaped by the historical, economic, cultural and social characteristics and contexts of each country, by the special national features of their occupational structures, and by the particular ways in which the division of labour has developed in the given country. Professional, technical and vocational education has the task of preparing human beings for the world of work, developing the national work culture, fostering citizenship skills and individual lifelong learning skills, and stimulating the growth of national economies and competitiveness in the context of local, regional and global markets. Equality, ethical values, environmental protection and intercultural competence are also among the objectives involved in education and training policies.

Education is valued more than ever before as a means of promoting economic growth and the good life through a contribution to the accumulation of human capital, and all advanced economies spend growing amounts of public and private money on it. At the level of individuals and their families, evidence suggests that it is not unrealistic to assume that investment in post-compulsory education is made on a fairly rational basis, given available information: education usually tends to boost earnings, and private rates of return to education are positive and sufficiently high to make such investment worthwhile. However, qualifications are not an automatic passport to success. Among some population groups they fail to lead on to high-status occupations. Furthermore, there is a more general danger of over-qualification and educational crowding-out, although the evidence presented so far is not totally convincing.

We have also focused on the relationship between education and the economy on the one hand and, at a more concrete level, on that between school, work and

unemployment on the other. The debate underway on these relationships displays, throughout, a tendency to foreground education as an important factor in economic productivity on the one hand and to blame, on the other hand, the educational system and, more concretely, the schools for failing to produce school leavers who are fully equipped for working life. An alternative tendency is to condemn the young for lacking the skills, habits of mind and work experience that are thought to be required by employers. However, unemployment and the difficulties that young people have with finding employment may be problems stemming from the system rather than from the qualities or lack of them of individual people. The structures of economies vary as to the extent to which available human and social capital is put to use to generate national wealth.

Liberal education fosters an active appreciation and understanding of, engagement in and vocation for creative learning. At the same time, an education of this kind trains people for different careers that draw upon the skills and knowledge accumulated through general and vocational education. We have sought to stress the manifold tapestry of liberal education that meets the varied individual needs of the world nations' young. However, for policy makers of this era of competing constituent demands for scarce resources and financial and moral triage, it is relevant to emphasise that liberal education also helps educational institutions to prepare young people for the workplace, thereby contributing to the national economy through the development of human and social capital.

Despite increasing criticism that general and liberal education as delivered both in secondary schools and in higher education lack practical elements and that it has little relevance to the needs of individuals and societies, creating and incorporating into school and university curricula a reformed and applied image of liberal education is, in our current socio-economic and political era, an important responsibility that must be taken seriously by policy makers. At the same time, while liberal learning is intended to help today's diverse students achieve the traditional benefits of liberal education (intellectual acuity and judgment, civic and social leadership, expanded horizons), in practice several shortcomings have been reported in education of this kind. Therefore, we should urgently adapt new designs for general and liberal education as a means of making possible secondary and tertiary learning that is more engaged, better connected with the communities and the economies where educational institutions operate, more hands-on and experiential and, in the long run, educationally more powerful.

Liberal education is under criticism for being insufficiently contextual and situated, for outcomes too amorphous to measure, for delivery too abstracted from career preparation. As a result, establishments of secondary and tertiary education around the globe, both in developed countries like England, France, and Japan and in developing nations, are in the process of dramatically revamping their educational provision to be more inclusive and less elitist. The prevalence of high-technology and service economies means that there is demand for people who are broadly and diversely educated, who know how to continue learning and how to learn in different modes, and who can communicate with people from different backgrounds. These skills are the specialty of the liberal arts.

The present debate adds, in a number of ways, to our understanding of the role of education and training in the fight against unemployment. It has pointed to skills deficiencies as one of the mediators of difficulties on the labour market; initially these deficiencies hamper students' transition from school to work, subsequently they restrict job entrants to a limited range of insecure and often unskilled employment. Their effects are, of course, exacerbated on weak and declining local labour markets, but we may expect them to be felt everywhere.

While the possession of basic skills as such cannot prevent joblessness, if there is an appropriate school system to equip young people with work-related skills, this probably offers a degree of protection against it. The standards that developed countries set in this area are continually rising, placing those whose educational performance is poor in relation to their peers increasingly at a competitive disadvantage. This underlines the importance of those basic skills on which all subsequent education and much work-related training depends.

Graduate unemployment has surfaced in a number of countries. This has led to an awareness that better TVET programmes catering for many of those who would otherwise wish to enter institutions of higher education are necessary because they both serve the national good and offer individuals thinking about higher education satisfying opportunities in other areas of life.

The task of TVET is to prepare a workforce for national and global labour markets, develop regional education and work culture, foster citizenship and lifelong learning skills, and promote national economic growth and competitiveness.

Education-industry partnerships have emerged as an important means of creating closer links between education and the economy. Although success has not been universal, examples were found in a number of countries of fruitful co-opera-

tion between educational institutions and industry and business on enhancing the development of individuals' human resources and making them better able to meet the requirements of the world of work. This was particularly apparent in schemes taking the form of industry placements of students engaged in related studies at an educational institution or manifested as jointly conducted programmes.

These changes are driven by the skills requirements of working life. In Iran, however, while it has been accepted that a trained labour force is a necessary precondition of economic development and that technical and vocational education programmes have a significant part to play in this context, a discrepancy between the supply of and demand for labour has always been a constraint. The continuing paradox is that in the country, a critical shortage of skilled labour exists alongside an equally critical surplus of job seekers; the people exist, but the skills and jobs do not.

The focus of a recent reform of secondary education has increasingly been on schools and vocationalism. A prominent requirement has been that schools should perform a diverse and multiple range of functions, preparing their pupils not only for employment both in the traditional and the modern sector of the economy but also for further technical training or academic studies. Despite continuing doubts about the efficacy of these relatively recent initiatives, they do contain elements essential to the development of an appropriate indigenous system of technical education capable of being modified, adapted and transferred to meet local needs of the given moment. Also, the widespread and compulsory inclusion of technical subjects in the school curriculum is a growing reality that will not only, ultimately, be of value in vocational preparation but will have ramifications that will come to be felt throughout the curriculum and structure of secondary-level education. Criticisms of such local initiatives, mostly based upon the unassailable logic of the economic cost-benefit ratio, would make a far more positive and acceptable contribution if they included more references to viable alternatives rather than only suggestions that we should preserve the curricular and structural status quo.

How vocational education systems react to changes on the labour market depends on whether these changes represent a response to problems internal to vocational education and if they do, in what ways. Any improvements in the status of vocational education are closely linked with improvements in the quality of education and training provision at the programme/curriculum level. Only qualitative enhancements in the standard of vocational education, particularly as regards work-

based training, will make it possible to attract high achievers, incorporate work-based qualifications into an integrated education and training system, and establish overarching qualifications across educational tracks. Giving vocational and, in particular, work-based education higher status depends above all on qualitatively improved TVET contents and pedagogy.

In most European languages, the etymological origins and meaning of the word "vocation" (from the Latin word *vocare*) plumb the depths of human self-realisation, identity and calling. In the northern and central European social context the concept of vocational education and training never suffered the loss of esteem that affected it in the US and the UK. As a result of this loss, in the US TVET has been replaced, as the term under which vocational education and training is discussed, by "career and technical education" (CTE), referring to career guidance and preparation.

However, besides such disagreements about whether secondary schooling should be vocationalised or not, educationalists have developed different models for linking education to work. The following criteria derived from research on these models, in particular on European traditions and experiences, may be seen as preconditions to the successful introduction an integrated model of secondary education:

- Any such system must have enough status to attract and motivate the young.
- It must offer incentives and institutional support sufficient to persuade employers to offer young people training of high quality.
- It must be feasible, in other words suited to the given national context and able to be implemented with the available resources.

In brief, one possible explanation for the failed vocationalisation of secondary schools in most developing countries is a lack of appropriate conditions for the implementation of technical and vocational education. By contrast, in developed countries the failure of vocationalisation is due the inflexible structure of their systems of education rather than, primarily, to a lack of funds. In fact, it seems that the rapid speed of economic changes in industrialised countries is the major reason why their educational systems have been unable to adapt themselves to the new economic situation. In these countries, a new wave of vocationalism seeks to increase student employability through the provision of core competencies such as problem-solving skills, adaptability, communication skills, mobility, and flexibility.

New technologies and more intense national and global competition require changes in work practices and make necessary a workforce with improved skills. Training is one of the principal means for industrialised economies to maintain their position in the world economy, while human capital has been seen as a key engine of the development of a competitive society. In effect, investment in human capital, where training the existing workforce is a major component, is at the core of a dynamic economy. The central component is investment in TVET because it is a source of multiple advantages that benefit several parties and domains:

- workers because it enhances their employability and raises their earnings;
- businesses because it improves their productivity and profitability;
- economies because it makes them more competitive and promotes their growth; and
- citizens because it increases their lifelong learning opportunities and options.

Strengthening an occupational and professional orientation has been a clear trend throughout the 1990s in Finland and the other EU countries. Subject-based curricula have been replaced by syllabuses designed on the basis of the operational complexes of working life, and curriculum objectives have been defined in terms of the acquisition of competencies necessary in a life of work. More intense collaboration with the world of work has been a constant feature, first manifested as the inclusion of practical training in all vocational qualifications, today seen in the expansion of workplace-based learning. In Finland, the most recent reform of the structure of qualifications similarly emphasises work-based learning.

Today, the expertise required from teachers, once seen as transmitters of knowledge who were guided by a profession- or subject-specific or discipline-dominated pedagogy, is that of a wide-ranging professional mastering broad areas of knowledge and skills. A new development stemming from a need to ensure that students meet the skills requirements of workplaces and supervise their workplace learning periods is that teachers take part, as intelligent listeners and active contributors, in the international discussion on education and training and respond to and draw on learning styles and methods as diverse as learners are varied in their needs.

The education of a liberal human being and their transition to work in the context of school-based academic and vocational education is a long-standing societal challenge. School-based vocational education systems are found in, for exam-

ple, Finland, Sweden, Spain, Greece and Portugal. Finland is among the countries where a little less than half the students in upper secondary and tertiary education are on TVET programmes. Compared to the other EU countries, vocational education enjoys an average degree of popularity in Finland. Of Finns aged between 25 and 64, about 55 per cent have vocational qualifications, 45 per cent academic degrees.

The extension and expansion of the European community in various socio-political fields and the completion of this process at the level of rules and regulations calls for a serious consideration of education and training as a factor in the mobilisation of workforces in Europe. The European Commission and specifically the EU Education Council must focus their attention on how the process of making educational and TVET systems within Europe more transparent at the level of policy, aims, forms, contents and curricula is to be organised, implemented and evaluated. In this respect, both the Copenhagen Declaration and the Council Resolution on Enhanced European Cooperation in Vocational Education and Training identified certain concrete outputs related to quality assurance and the transparency and recognition of qualifications made with a view to improving the overall performance and attractiveness of VET and fostering workforce mobility (European Commission, 2005).

Increasingly, employees in Europe must meet demands for flexibility and mobility at work and adjust to continuous changes in their work context. In this situation they need specific learning and work attitudes that enable them to make an active and effective contribution to work processes.

In Finland as in other European countries, improvements in the economy, efficiency and flexibility of education have in the last few years become central educational policy aims. This has foregrounded the recognition of out-of-school learning as an important area of educational development work. The recognition of an individual's prior learning is closely linked also with efforts to promote citizens' mobility in Europe and globally. In the last few years, the EU and other international agents have established several relevant mechanisms, many of them associated with the identification, transfer and recognition of an individual's previously acquired competencies in their new countries of work. These measures are connected with, among other things, efforts to enhance the transparency of qualification and educational systems; the introduction of certificate supplements for international use; the development of credit measurement and transfer systems; an expansion, as a

step towards European qualifications, of the Europass system; and the development of quality assessment. An European qualification framework would function as a single European structure for ensuring the transparency of qualifications and competencies.

However, if we are looking for strategies for achieving success in efforts to establish a smooth transition from school to work, redesigning and refocusing upper-secondary-level vocational studies, blending academic and vocational education, connecting schools and workplaces, and linking secondary and post-secondary education play a crucial role in a reorganisation of work-based learning. Promoting a dialogue on school-to-work transition, reviewing employers' role in youth preparation for the world of work and persuading them to involve themselves in school programmes and maintain this involvement, and setting up local partnerships between school and the workplace are critical preconditions of favourable outcomes in this area. Furthermore, we need to build a system to connect school and employment that is based on a user-friendly model for business-education partnerships. Last but not least, there should be a strong emphasis on meeting teachers' professional development needs.

The context where learning takes place at the workplace is the work community as a whole, which can include learning networks and a learning organisation. During their vocational studies young employees have taken part in networks among workplaces and educational establishments co-operating to ensure that work-based learners spending their practical training periods at workplaces gain fruitful learning experiences. The degree of student participation in learning networks has depended on the nature of the networking strategy applied by training providers and workplaces. Irrespective of the given national context, lifelong learning is universally considered an important educational policy goal. Young citizen's perception of their occupational tasks and environments after they have completed their studies and entered working life remains a problem: do young people in employment still see the workplace and their tasks there as learning situations and contexts? As regards work-based learning, it is useful to distinguish between its organisation and the learning process itself. It may be said that the basic unit structuring the process of organising work-based learning is the young employee's action context where the purpose, idea and practical implementation of work-based learning come together and where the young person works for shorter or longer periods on a specific task to produce a concrete outcome. Here, learning derives its meaning from work.

Work intended to generate innovative, contextual, collaborative and problem-based learning requires the young employee to be self-regulated, committed, reflective, and prepared to tackle new tasks and situations.

In conclusion, those wishing to correctly identify problems affecting and challenges emerging in the structure of secondary education are invited to consider the following suggestions likely worthy of their attention:

- It seems that when designing a vocationally based curriculum for secondary schools, experienced industrialists, employers, trade and professional groups and private practitioners should be consulted because they are well placed to help create programmes receptive to the needs of industry.

- If the school curriculum is to respond more effectively to the needs of the economy, its content must be reorganised to reflect the co-operative role of schools and industry in the learning process. Here it is essential to review the experience of the leading-edge countries.

- As the reformed secondary education system emphasises functional knowledge and skills, there may be a need to reorganise teacher education programmes at all levels to include industrial study so that not only pedagogical supervisors but also other teachers may develop insights into what is happening in the world of work.

- Exchange visits of school principals at workplaces and personnel from industry at schools could be considered because this is an important means of maintaining effective communication between educational institutions and industry and business.

- As occupations and job requirements are changing rapidly, national curricula on vocational subjects should be as flexible as is reasonably possible.

- Improving career education and counselling services and re-considering their role as an important guideline to planning and implementing effective career development programmes so as to ensure the successful delivery of work-based learning should be at the heart of educational policies.

- Finally, in order to bridge the skills gap between work and education successfully, educational policy makers need to offer TVET teachers a set of resources to help them meet the new challenges involved in the new legislation on education and work partnerships and in efforts to create a national workforce equal to the current intensely competitive economy of the 21st century, increasingly based on knowledge and soft technology. Such resources might consist of a range of activities designed to give students practice in developing and applying, in meaningful real-life settings, both basic academic skills in reading, writing and numeracy and the more advanced higher-order skills of problem-solving, critical thinking, group interaction, and oral communication.

In these circumstances, there is an essential second step that vocational educators must take – showing themselves willing to change with a view to offering better programmes. We should identify the essential elements of a good work-based and employment-related training and education system and then stick to those principles during the debate. A stress on new skills standards in technical and vocational education generates a new competitive advantage for workers and businesses. Such new standards serve workers and students as clear benchmarks for identifying the skills and knowledge leading to the high-skill, high-pay jobs of the future. They also supply businesses with the skilled workforce they need in order to thrive on a very tough international marketplace. Revised versions of TVE systems will provide all young people with portable certificates of skill achievement, representing the ”passports” that they need to communicate their training, education and experience to potential employers.

Bibliography

Abrokwa, C. K. (1995). Vocational education in the Third World: Revisiting the debate. *The Vocational Aspect of Education, 47* (2), 129–139.

Aittola, T., Koikkalainen, R. & Vaherva, T. (1997). *Aikuisten oppiminen arkielämän ympäristöissä* [Adults' everyday learning]. Jyväskylä, Finland: Jyväskylän yliopisto, Kasvatustieteen laitos.

Al-Aaqib, A. A. (1974). *Technical education as a foundation for university and higher education*. Cairo, Egypt: Arabic Organisation for Education, Culture and Science.

Alexander, T. J. (1996). OECD Jobs Study 1994: Unemployment is probably the most widely feared phenomenon of our times. It touches all parts of society. In C. H. A. Verhaar, P. M. De Kalver, M. P. M. De Goede, L. A. C. Van Ophem, & A. De Vries (Eds.), *On the challenges of unemployment in a regional Europe* (pp. 9–24). Aldershot, UK: Avebury.

Armstrong, L. A. Jr. (2001). *A new game in town: Competitive higher education*. Unpublished manuscript, University of California, Berkeley, California.

Arrow, K. J. (1973). Higher education as filter. *Journal of Political Economics, 2,* 193–216.

At-Risk Youth Task Force (ARYTF). (1993). *Youth at work: Making it in the global economy.* Atlantic City, NJ: New Jersey State Employment and Training Commission.

Ashton, D., & Green, A. (1996). *Education, training and the global economy.* London: Edward Elgar.

Ashton, D., Maguire, M. J., & Spilsbury, M. (1990). *Restructuring the labour market: The implications for youth.* London: Macmillan.

Association of American Colleges and Universities. (2002). *Greater expectations: A new vision for learning as a nation goes to college*. Washington, DC: Author.

Atchoarena, D. & Gasperini, L. (Eds.). (2003). *Education for rural development: Towards new policy responses.* A joint study conducted by Food and Agriculture Organisation of the United States and United Nations Education, Science and Cultural Organization. Paris: FAO and UNESCO-IIEP.

Azizi, N. (1998, September). *Education-business partnerships: How schools can prepare students for a changing labour market in the next century.* Paper presented at the ECER 98 conference, Ljubljana, Slovenia.

Azizi. N. (2001, November). *High skill economy and the future workforce: The revised role of TVE in preparing young people with key qualifications.* Paper presented at the International Conference On Technology and Vocational-Technical Education, Selangor, Malaysia.

Azizi, N. (2003). Education and labour market: Preparing young people with key qualifications. *Shiraz University's Journal of Humanities, 30* (1), 25–37.

Azizi, N. (2004). Employment and higher education: Strategies for linking higher education to the needs of labour market. *Quarterly Journal of Research and Planning in Higher Education, 10* (2), 84–98.

Azizi, N. (2005, May). The role of TVET in economic development: An analytical review on the developed societies experiences. Paper presented at the Second TVET National Congress, Sari, Indonesia.

Azizi, N. & Lasonen, J. (2004). *Work-based learning in European context: A critical reflection on new challenges* (20 pages). Conference Proceedings of the 14th International TVET Conference. [CD_rom].Vienna, Austria: Festo Didactic.

Aziz-zadeh, H. (1994). Iran: System of education. In T. Husén, & T. N. Postlethwaite (Eds.), *The International Encyclopedia of Education* (2nd ed., Vol. 3, pp. 3007-3011). Oxford: Pergamon Press.

Bailey, C. (1986). The characterization, justification and content of liberal education. In R. Gibson (Ed.), *Liberal education today?* Cambridge: CIE.

Barnes, A., & Andrews, D. (1995). *Developing careers education and guidance in the curriculum,* London: David Fulton.

Barro, R. (1991). Economic growth in a cross section of countries. *Quarterly Journal of Economics, CVI* (2), 407–443.

Bartel, A. (1994). Productivity gains from the implementation of employee training programs. *Industrial Relations, 33* (4), 411–425.

Bates, I., Clarke, J., Cohen, P., Finn, D., Moore, R., & Willis, P. (Eds.). (1984). *Schooling for the dole? The new vocationalism.* Basingstoke: Macmillan.

Becker, G. S. (1975). *Human capital: A theoretical and empirical analysis, with special reference to education* (2nd ed.). Princeton, NJ: Princeton University Press.

Bell, D. (1973). *The coming of post industry society: A venture in social forecasting.* New York: Basic Books, Harper.

Berg, I. (1970). *Education and jobs: The great training robbery.* New York: Praeger.
Billett, S. (1996). Situated learning: Bridging sociocultural and cognitive theorising. *Learning and Instruction, 6* (3), 263–280.
Billett, S. (1998). Understanding workplace learning: Cognitive and sociocultural perspectives. In D. Boud (Ed.), *Current issues and new agendas in workplace learning* (pp. 47–68). Adelaide, Australia: National Centre for Vocational Education Research (NCVER).
Bishop, J. H. (1996). Signaling the competencies of high school students to employers. In L. B. Resnick, & J. G. Wirt (Eds.), *Linking school and work: Roles for standards and assessment* (pp. 79–124). San Francisco: Jossey-Bass.
Blaug, M. (1973). Education and the employment problem in developing countries. Geneva, Switzerland: International Labour Office.
Blaug, M. (1976). The empirical status of human capital theory: A slightly jaundiced survey. *Journal of Economic Literature, 14* (3), 827–55.
Boland, P. (1995). *School-to-work: Equitable outcomes.* Newton, MA: WEEA Publishing Center.
Boreham, N., Fischer, M., & Samurcay, R. (Eds.). (2002). *Work process knowledge.* London: Routledge.
Bowman, M. J. (1990). Overview essay: Views from the past and the future. *Economics of Education Review, 9* (4), 283–307.
Boyer Commission. (1998). *Reinventing undergraduate education: A blueprint for America's research universities.* Stanford, CA: Carnegie Foundation.
Braverman, H. (1974). *Labour and monopoly capital: The degradation of work in the twentieth century.* New York: Monthly Review Press.
Brown, A., & Behrens, M. (1996). Starting unemployed careers: How young people are marginalised in English and German labour markets. In M. P. M. de Goede, P. M. de Kiaver, J. A. van Ophem, C. H. A. Verhaar, & A. de Vries (Eds.), *Youth: Unemployment, identity and policy* (pp. 31–47). Aldershot, UK: Avebury.
Brown, C., Reich, M., & Stern, D. (1992). *Becoming a high-performance work organization: The role of security, employee involvement and training.* Los Angeles, CA: University of California, Berkeley, Institute of Industrial Relations.
Brown, P., & Ashton, D. N. (Eds.). (1987). *Education, unemployment and labour markets.* London: Falmer Press.
Brown, P., & Lauder, H. (Eds.). (1992). *Education for economic survival: From Fordism to post-Fordism?* London: Routledge.
Brown, P., & Lauder, H. (1995). Post-Fordist possibilities: Education, training and national development. In L. Bash, & A. Green (Eds.), *Youth, education and work* (pp. 19–32). London: Kogan Page.

Brown, P., & Lauder, H. (1996). Education, globalisation, and economic development. *Journal of Education Policy,* 11 (1), 1–24.

Bruner, J. (1990). Acts of meaning. Cambridge, MA: Harvard University Press.

Buechtemann, C. F. (1994). *The changing role of vocational and technical education and training (VOTEC). Vocational and technical education and training for the 21st century: Opening pathways and strengthening professionalism.* Paris: OECD.

Bynner, J. (1996). Resisting youth unemployment: The role of education and training. In M. P. M. de Goede, P. M. de Kiaver, J. A. van Ophem, C. H. A. Verhaar, & A. de Vries (Eds.), *Youth: Unemployment, identity and policy* (pp. 13–30). Aldershot, UK: Avebury.

Bynner, J., & Roberts, K. (1990). *Youth and work: Transition to employment in England and Germany.* London: Anglo-German Foundation.

Candy, P., & Matthews, J. (1998). Fusing learning and work: Changing perceptions of workplace learning. In D. Boud (Ed.), *Current issues and new agendas in workplace learning* (pp. 9–30). Adelaide, Australia: National Centre for Vocational Education Research (NCVER).

Cantor, J. A. (1991, February). *Public education and economic development: Partnerships that work.* Paper presented at the Annual Meeting of the Eastern Educational Research Association, Boston, MA.

Cantor, L. (1989). *Vocational education and training in the developed world: A comparative study.* London: Routledge.

Carnoy, M. (1977). *Education and employment: A critical appraisal.* Paris: UNESCO.

Carter, M. S. (1989). *A study of the impact of vocational education on income, employment and attrition in selected school districts in Texas.* Dissertation Abstracts International. A and M University, TX, USA.

Castells, M. (2000). *The information age: Economy, society and culture. Vol. 1: The rise of the network society* (2nd edition). Oxford: Blackwell.

Chin-Aleong, M. (1988). Vocational secondary education in Trinidad and Tobago and related evaluation results. In J. Lauglo, & K. Lillis (Eds.), *Vocationalizing education: An international perspective* (Comparative and International Education Series No. 6, pp. 293–325). Oxford: Pergamon Press.

Chrosciel, E. (1989). The concept of modules of employable skills (MES) training. In H. Krönner (Ed.), *Innovative methods of technical and vocational education. Report of the UNESCO international symposium, Hamburg, June 5–9, 1989.* Bonn, Germany: Federal Ministry of Education and Science.

Cobb, R. B., & Neubert, D. A. (1992). Vocational education models. In F. R. Rusch, L. DeStefano, J. Chadsey-Rusch, L. A. Phelps, & E. Szymansk (Eds.), *Transition from school to adult life* (pp. 93–113). Sycamore, IL: Sycamore Publishing.

Cohen, D. (1985). How to evaluate the solvency of an indebted nation? *Economic Policy, 1* (1), 3–13.

Colorado Department of Education. (1990). *Employability skills.* Denver, CO: Author.

Confederation of British Industry (CBI) (1988). *Building stronger partnerships between business and secondary education.* London: Author.

Connor, W. R. (1999). Liberal arts education in the twenty-first century: An AALE scholar essay (AALE Occasional Papers in Liberal Education). New York: American Academy for Liberal Education.

Coombs, P. H. (1985). *The world crisis in education: The view from the eighties.* New York: Oxford University Press.

Couch, I. (1995). Work experience: An alternative or companion to the dissertation? A case study. *Journal of Geography in Higher Education, 19* (2), 212–216.

Creese, M. (1986). A head's view of liberal education. In R. Gibson (Ed.), *Liberal education today?* Cambridge: CIE.

Cumming, J. (1987). Curriculum and the world of work: Issues and trends in Australia. *British Journal of Education and Work, 1* (3), 179–186.

Cumming, J. (1988). Employer and educator expectations for youth: Fostering the need for greater collaboration and development. *British Journal of Education and Work, 2* (2), 15–26.

Daggett, W. R. (1992). Job skills of 90s require new educational model for all students. *Liaison Bulletin, 18* (5), 1–19.

Dale, R. (Ed.). (1985). *Education, training and employment: Towards a new vocationalism?* Oxford: Pergamon Press.

Davis, C. (1991). Vocational education project planning in developing countries: A critical theory paradigm. *Journal of Industrial Teacher Education, 28* (3), 35–45.

Dearing, R. (1996). *Review of qualifications for 16–19 year olds: Full report.* Hayes, Middlesex: SCAA Publications.

De Goede, M. P. M., de Kiaver, P. M., van Ophem, J. A. C., Verhaar, C. H. A., & de Vries, A. (1996). *Youth: Unemployment, identity and policy.* Aldershot, UK: Avebury.

Department of Education and Employment (DFEE). (1996). *Survey of school-business links in 1995.* London: Author.

Department for Education and Skills (DfES) (1977). *Education in school.* London: HMSO.

Department for Education and Skills (DfES). (1995). *Work experience: A guide for schools.* London: Author.

Descy, P. & Tessaring, M. (Eds.). (2001). *Training and learning for competence. Second report on vocational training research in Europe*. Luxembourg: Office for Official Publications of the European Communities.

Dewey, J. (1916). *Democracy and education. An introduction to the philosophy of education*. New York: Free Press.

Dore, R., & Oxenham, J. (1984). Educational reform selection for employment – An overview. In J. Oxenham (Ed.), *Education versus qualifications? A study of relationships between education, selection for employment and the productivity of labour* (pp. 3–40). London: Allen and Unwin.

Dore, R. P., & Sako, M. (1991). *How the Japanese learn to work*. London: Routledge.

Dougherty, C. (1989). *Cost-effectiveness of national training systems in developing countries: Issues and experience*. Washington, DC: World Bank, Education and Employment Division.

Dowdy, C. A., & Evers, R. B. (1996). Preparing students for transition: A teacher primer on vocational education and rehabilitation. *Intervention in School and Clinic, 31* (4), 197–208.

Dunham, D. B. (1989). *Vocational education in the secondary school: The case of continuation*. Corvallis, OR: Oregon State University.

Easton, P., & Klees, S. (1992). Conceptualising the role of education in the economy. In R. F. Arnove, G. P. Kelly, & P. G. Altbach, (Eds.), *Emergent issues in education: Comparative perspectives* (pp. 123–142). New York: State University of New York Press.

Ebtekar, T. (1994). *The development of technical and vocational education for the Islamic Republic of Iran: A case study in quality improvement*. Melbourne, Australia: Royal Melbourne Institute of Technology.

Egley, R. (1978). Education for industry. *Educational Research,* 20 (1), 5–17.

Emadzadeh, M. (1995). *Mobahesi az Eqtesade Amozesh va Parvaresh* [A general review on the educational economics]. Isfahan, Iran: Isfahan University Press.

Emmerij, L. (1972). Research priorities of the world employment programme. *International Labour Review, 105* (5), 415.

Engeström, Y. (2001). Expansive learning at work: Toward an activity theoretical reconceptualization. *Journal of Education at Work, 14* (1), 133–156.

Englander, S., & Gurney, A. (1994). Productivity growth: Medium-term trends. *OECD Economic Studies, 22,* Spring, 112–131.

Esland, G. (Ed.). (1991). *Education, training and employment*. Wakingham: Addison-Wesley.

European Commission. (1999). *Key data on vocational training in the European Union*. Luxembourg: Office for Official Publications of the European Communities.

European Commission (2002). *Education and training in Europe: Divers systems, shared goals for 2010.* Luxembourg: Office for the Official Publications of the European Communities.

European Commission (2005). *Education and training 2010: Diverse systems, shared goals.* Retrieved October 2005, from http://europa.eu.int/comm/education/policies/2010/et_2010_en.html.

Eurostat. (2002). *Total unemployment rate.* Retrieved July 12, 2002, from http://europa.eu.int/comm/eurostat/Public/datashop/printproduct/EN?catalogue =Eurostat&product=1-em071-EN&mode=download.

Eurydice. 1997. *Secondary education in the European Union.* Brussels: Author.

Evans, K., & Haffenden, I. (1991). *Education for young adults: International perspectives.* London: Routledge.

Fafunwa, A. B., & Aisiku J. U. (1982). *Education in Africa: A comparative survey.* London & Boston, MA: Allen and Unwin.

Farnham, N., & Yarmolinsky, A. (1996). *Rethinking liberal education.* New York: Oxford University Press.

Felstead, D. A., Ashton, D. N., Green, F., & Sung, I. (1994). *International study of vocational education and training in the Federal Republic of Germany, France, Japan, Singapore, and the United States.* Leicester, UK: University of Leicester, Centre for Labour Market Studies.

Feuzat, Y. (1978). *Introduction to educational planning.* Tehran, Iran: Sepahan University Press.

Further Education Unit. (1980). *Developing social and life skills strategies for tutors.* London: Author.

Further Education Unit. (1981). *ABC in action: A report from a FEU/CGLI working party on the piloting of A Basis for Choice 1979–1981.* London: Author.

Further Education Unit. (1982). *Basic Skills.* London: Author.

Finch, C. (1996, September). *School-to-work transition in the United States.* Paper presented at the European Congress on Educational Research, Seville, Spain.

Finegold, D. (1993). *Making apprenticeships work* (RAND Issue Paper 1). Santa Monica, CA: RAND Corporation.

Forrest, G. (Ed.). (1996). *Experiences of work: Current issues and developments.* Coventry, UK: SCIP.

Foster, D. (2003). *On the goal of liberal education.* Dialogue. Ashland, OH: Center for Public Affairs. Retrieved November 24, 2005 from http://www.ashbrook.org/publicat/dialogue/foster-lib_ed.html.

Frantz, N. R. Jr., Strickland, D. G., & Elson, D. (1988). Is secondary vocational education at risk? *Vocational Education Journal, 63* (7), 3–14.

Fresh, S. (Ed.). (1979). *International developments in post-secondary, short-cycle education*. Washington DC: American Association of Community and Junior Colleges.

Garen, J. (1985). Worker heterogeneity, job screening, and firm size. *Journal of Political Economics, 93,* 715–739.

Garrity, R. P. (1989). *A comparative analysis of academic, general, and vocational education graduates in rural Northwest Pennsylvania. Dissertation Abstracts International*. Pennsylvania State University, USA.

Georg, W. (1989). *The Japanese market-model. A comparison of Japanese qualification strategies with those of other countries.* In: H. Krönner (Ed.), *Innovative methods of technical and vocational education Report of the UNESCO international symposium, Hamburg, June 5–9, 1989*. Berlin, Germany: UNESCO-UNEVOC.

Gershuny, J. (1978). *After industrial society: The emerging self service economy.* London: Macmillan.

Gleeson, D. (Ed.). (1990). *Training and its alternatives.* Milton Keynes, UK: Open University Press.

Godwin, D. (1990). Technical education in sub-Saharan African countries: A review of developments and strategies. *Vocational Aspect of Education, 42* (113), 91–99.

Goodlad, S. (1994). *Education for the professions: Quis custodiet? Proceedings of the Annual Conference of the Society for Research into Higher Education 1987.* Milton Keynes, UK: Open University Press.

Gould, W. T. S. (1982). Education and internal migration: A review and report. *International Journal of Educational Development, 1* (3), 103–11.

Grace, G. (1986). Liberal education: Some sociological reflections. In R. Gibson (Ed.), *Liberal education today?* Cambridge: CIE.

Green, A. (1991). *The reform of post-16 education and training and the lessons from Europe*. London: University of London, Department of Policy Studies, Institute of Education.

Green, A. (1995). The role of the state and the social partners in VET systems. In L. Bash, & A. Green (Eds.), *Youth, education and work* (pp. 92–108). London: Kogan Page.

Greinert, W. (1989). An international comparison of systems of technical and vocational education. An attempt at classification. In H. Krönner (Ed.), *Innovative methods of technical and vocational education. Report of the UNESCO international symposium, Hamburg, Germany, June 5–9, 1989* (pp. 15–19). Bonn, Germany: Federal Ministry of Education and Science.

Griffiths, T., & Guile, D. (2000, September). *Learning and work experience: European perspectives on policy, theory and practice*. Paper presented at the European Conference on Educational Research, EERA, Edinburgh, Scotland.

Grubb, W. N. (1993). The varied economic returns to postsecondary education: New evidence from the class of 1972. *Journal of Human Resources, 28* (2), 365–382.

Grubb, W. N. (1999). Lessons from education and training for youth: Five precepts. In *Preparing youth for the 21st century: The transition from education to the labour market*. Paris: Organization for Economic and Cultural Development.

Grugel, L. (1995). Liberal education. *Liberal Education, 81* (2), 50–52.

Gustafsson I. (1988). Work as education – Perspectives on the role of work in current educational reform in Zimbabwe. In J. Lauglo, & K. Lillis (Eds.), *Vocationalizing education: An international perspective* (Comparative and International Education Series No. 6, pp. 219–229). London: Pergamon Press.

Haas, A. (1994). *Case studies on technical and vocational education in Asia and the Pacific: An overview*. Melbourne, Australia: Royal Melbourne Institute of Technology.

Hagell, A., & Shaw, C. (1996). *Opportunity and disadvantage at age 16*. London: Policy Studies Institute.

Hager, P. (1998). Understanding workplace learning: General perspectives. In D. Boud (Ed.), *Current issues and new agendas in workplace learning* (pp. 31–46). Adelaide, Australia: National Centre for Vocational Education Research (NCVER).

Harrington, L. K. (2003). To seek a newer world: Revitalizing liberal education for the twenty-first century: Perspectives. *Liberal Education, 89* (2), 46.

Harris, A., Jameison, I., & Russ, J. (1997). *Equipping young people for working life: Effective teaching and learning in work-related context*. London: DFEE.

Hart, P. E. (1988). *Youth unemployment in Great Britain*. New York: Cambridge University Press.

Henderson, J., & Knutton, S. (1991). The world of work: Curriculum models. *School Organisation, 11* (3), 271–281.

Hersh, R. H. (1997). The liberal arts college: The most practical and professional education for the 21st century. *Liberal Education, 83* (3), 26–33.

Hillage, J. (1995), *Progress in partnership: National evaluation of the education business partnership initiative*. Brighton, UK: Institute of Manpower Studies.

Hillage, J., Hyndley, K., & Pike, G. (1995). *Employers' views of education business links*. (Report 283). Brighton, UK: University of Sussex, Institute for Employment Studies.

Hinchiffe, K. (1983). *Cost structures of secondary schooling in Tanzania and Colombia (a DISCUS working party)*. Washington, DC: World Bank, Education Department.

Hodkinson, P., & Issitt, M. (1995). The challenge of competence for the caring professions: An overview. In P. Hodkinson and M. Issitt (Eds.), *The challenge of competence: Professionalism through vocational education and training* (pp. 1–12). London: Cassell.

Hodkinson, P. (1996). Careership: The individual, choices and markets in the transition into work. In J. Avis, M. Bloomer, G. Esland, D. Gleeson, & P. Hodkinson (Eds.), *Education, politics and work* (pp. 121–139). London: Cassell.

Holt, M. (1987). *Skills and vocationalism: The easy answer.* Milton Keynes, UK: Open University Press.

Husén T., (1989). Integration von Allgemein- und Berufsbildung: eine internationale Perspektive [Integration of general and vocational education: An international perspective. *Berufsbildung* CEDEFOP (1), 10–14.

Ingham, B. (1995). *Economics and development.* Maidenhead, UK: McGraw-Hill.

Institute for Research on Higher Education at the University of Pennsylvania (IRHE). (1995). Connecting schools and employers: Work-related education and training. *Change, 27,* 39–42.

Jackson, M. P. (1985). *Youth unemployment.* London: Croom Helm.

Jamieson, I. (1985). Corporate hegemony or pedagogic liberation? The school-industry movement in England and Wales. In R. Dale (Ed.), *Education, training and employment.* Oxford: Pergamon Press.

Jamieson, I. (1986). *Work experience workbooks: A critical review.* York, UK: Longman.

Jamieson, I. (1988). *Mirrors of work: Work simulations in schools.* London: Falmer Press.

Jamieson, I. (1991). School work and real work: Economic and industrial understanding in the curriculum. *The Curriculum Journal, 2* (1), 55–67.

Jamieson, I. (1994). Education for the life of work. In T. Husén and T. N. Postlethwaite (Eds.), *The International Encyclopedia of Education* (2nd ed., Vol. 4, pp. 1736–1740). Oxford: Pergamon Press.

Jamieson, I. (1996). Education and business: Converging models. In C. Pole, & R. Chawla-Duggan (Eds.), *Reshaping education in the 1990s: Perspectives on secondary schooling.* London: Falmer Press.

Jamieson, I., & Lightfoot, M. (1982). *Schools and industry.* London: Methuen.

Johnes, G. & Johnes, J. (2004). (Eds.). *International handbook on the economics of education.* Gloucester, UK: Edward Elgar.

Kairamo, K. (Ed.). (1989). *Education for life: A European strategy.* London: Butterworths.

Kantor, H. (1994). Managing the transition from school to work: The false promise of youth apprenticeship. *Teachers College Record, 95,* 443–461.

Karmel, P. (1985). *Quality of education in Australia. Report of the Review Committee.* Canberra, Australia: AGPS

Keiani, M. A., & Azizi, N. (1991). *The second plan for development of Kurdistan University: The realities of education in the state of Kurdistan*. Sanandaj, Iran: Kurdistan University.

Kerckhoff, A. C. (1990). *Getting started: Transition to adulthood in Great Britain*. Boulder, CO: Westview Press.

King, K. (1993). Technical and vocational education and training in an international context. *Vocational Aspect of Education, 45* (3), 201–216.

Kivinen, O., Silvennoinen, H., & Puustelli, P. (1999) (Eds.). *Work-based learning. Challenges and prospects.* Helsinki, Finland: Ministry of Education.

Klees, S. J. (1986). Planning and policy analysis in education: What can economics tell us? *Comparative Education Review, 30* (4), 574–607.

Kolb, D. (1984). *Experiential learning. Experience as the source of learning and development.* Englewood Cliffs, NJ: Prentice Hall.

Laki ammatillisesta koulutuksesta (Op 301/21.8.1998/630) [Vocational Education Act]. In H. Ranta (Ed.) (1999), Opetustoimen lainsäädäntö 1999 [Educational legislation 1999]. Helsinki: Kauppakaari OYJ. Lakimiesliiton Kustannus.

Lakimiesliitto. (2000). Opetustoimen lainsäädäntö 2000 [Educational legislation 2000]. Helsinki: Lakimiesliiton kustannus.

Lamson, H. O. P. (1995). International education and liberal learning. *Liberal Education, 81* (1), 24–29.

Lasonen, J. (1996a). Itsearvioinnin lähtökohdat ja toteutuminen eräissä nuorisoasteen kokeiluyksiköissä [Starting points and implementation of self-evaluation in some units of the upper secondary education experiment]. In: A. Räisänen & T. Frisk (Eds.), *Silta uuteen opiskelija-arviointiin, arviointia opiskelija-arvioinnista* [A bridge to new student assessment, assessing student Assessment]. Helsinki, Finland: Opetushallitus.

Lasonen, J. (Ed.) (1996b). *Reforming upper secondary education in Europe. The Leonardo da Vinci Project Post-16 Strategies* (Publication Series B. Theory Into Practice 92). Jyväskylä, Finland: University of Jyväskylä, Institute for Educational Research. (ERIC Document Reproduction Service No. ED 402 455; CE 073 102.)

Lasonen, J. (1999a) Enterprises as environments for workplace learning and training. In J. Lasonen (Ed.), *Workforce preparation in a global context* (Occasional Papers No 8, pp. 199–216). Jyväskylä, Finland: University of Jyväskylä, Institute for Educational Research.

Lasonen, J. (1999b). Strategies for achieving parity of esteem in European upper secondary education. In J. Lasonen (Ed.), *Workforce preparation in a global context* (Occasional Papers No 8, pp. 145–154). Jyväskylä, Finland: University of Jyväskylä, Institute for Educational Research.

Lasonen, J. (2000a). Enterprises and schools as work-based learning environments in Finland. In M.-L. Stenström & J. Lasonen (Eds.), *Strategies for reforming initial vocational education and training in Europe* (pp. 177–202). Jyväskylä, Finland: University of Jyväskylä, Institute for Educational Research.

Lasonen, J. (2000b). Oppilaitosten ja yritysten verkottuminen siltana ammatillisesta koulutuksesta työelämään [Networking between schools and enterprises as a bridge from education to work]. *Ammattikasvatuksen aikakauskirja 2* (3), 38–49.

Lasonen, J. (2001). Työpaikat oppimisympäristöinä [Workplaces a learning environments]. Helsinki, Finland: Opetushallitus

Lasonen, J. (2002). Teachers' roles as supervisors of work-based learning: A Finnish case. In *Conference Proceedings on Employability, New Challenge for TVET, World Conference of IVETA* [CD-ROM]. July 2002, Mauritius. 19 pages.

Lasonen, J. (2004). Workplaces as learning environments: Assessments by young people after transition from school to work. *Berufs- und Wirtschaftspädagogik (2)*, 7. Available online at http://www.bwpat.de.

Lasonen, J., & Manning, S. (2001). How to improve the standing of vocational as against general education: A comparative investigation of strategies and qualifications across Europe. In P. Descay & M. Tessaring (Eds.), *Training in Europe. Second report on vocational training research in Europe 2000: Background report* (CEDEFOP Reference Series, Vol. 1, pp. 115–167). Luxembourg: Office for Official Publications of the European Communities.

Lasonen, J., & Young, M. (Eds.). (1998). *Strategies for achieving parity of esteem in European upper secondary education*. Jyväskylä, Finland: University of Jyväskylä, Institute for Educational Research.

Lauglo, J., & Lillis, K. (Eds.). (1988). *Vocationalizing education: An international perspective* (Comparative and International Education Series No. 6). Oxford: Pergamon Press.

Lauglo, J., & Norman, A. (1988). Diversified secondary education in Kenya. In J. Lauglo, & K. Lillis (Eds.), *Vocationalizing education: An international perspective* (Comparative and International Education Series No. 6, 235–256). Oxford: Pergamon Press.

Lave, J. & Wenger, E. (1991). *Situated learning: legitimate peripheral participation*. Cambridge: Cambridge University Press.

Law, D. A., & Pepple, J. D. (1990). *Integrated curriculum: A nationwide perspective and integration models that are working*. City of Greely, CO: Greeley.

Lee, L. S. (1994, December). *Vocational-technical education reforms in Germany, Netherlands, France and U.K. and their implication to Taiwan*. Paper presented at the Annual Meeting of the American Vocational Association Convention, Dallas, TX.

Lemann, N. (2004). Liberal education and professionals. *Liberal Education, 90* (2), 12–17.

Leroux, J. A., & Laflear, S. (1995). Employability skills: The demands of the workplace. *Vocational Aspect of Education, 47* (2), 189–196.

Leskes, A. (2001). Designing 21st century liberal education. *Liberal Education*, 87 (3), 32.

Levinson, M. (1999). *The demands of liberal education*. Oxford: Oxford University Press.

Lillis, K., & Hogan, D. (1983). Dilemmas of diversification: Problems associated with diversification of education in developing countries. *Comparative Education, 19,* 89–108.

Linklater. P. (Ed.). (1987). *Education and the world of work: Positive partnerships*. London: Society for Research into Higher Education and Open University Press.

Local Education Authority (LEA). (1984). *Leeds partnership schemes*. Leeds: LEA.

Lucas, R. (1988). On the mechanics of economic development. *Journal of Monetary Economics, 22*, 3–42.

Machin, S. (2005, September). *Education and the labour market*. Paper presented at the Seminar on Economics of Education, Helsinki, Finland.

Mankiw, G. D., Romer, D., & Weil, D. N. (1992). A contribution to the empirics of economic growth. *Quarterly Journal of Economics, 107* (2), 407–437.

Manpower Services Commission, National Economic Development Council. (1984). *Competence and competition: Training and education in the Federal Republic of Germany, the United States and Japan*. London: NEDO and Manpower Services Commission.

Marie, S. W. (1988). *The effect of increased academic requirements for graduation*. Ann Arbor, MI: University of Michigan.

Marklund, S. (1988). Integration of school and the world of work in Sweden. In J. Lauglo, & K. Lillis (Eds.), *Vocationalizing education: An international perspective* (Comparative and International Education Series No. 6, pp. 173–189). Oxford: Pergamon Press.

Marshall, G. (2003). A liberal education is not a luxury. *Chronicle of Higher Education, 50* (3), 16–17.
Marsick, V. & Watkins, K. (1990). *Informal and incidental learning in the workplace*. London: Routledge
Mathews, L. (1989). *Tools of challenge: New technology and the democratisation of work*. Sydney, Australia: Pluto Press.
McBride, P., & Moreland, N. (1991). Skills 2000: A summary and critique. *Vocational Aspect of Education, 43* (3), 217–224.
McCoy, J. A., & Reed, D. F. (1991). Preparing students for the future world of work. *NASSP Bulletin,* 94–97.
McKinnon M., & Ahola-Sidaway, J. (1994). Office workers, factory workers, cashiers or cooks: A North American perspective on vocational education reform at the secondary school level. *Vocational Aspect of Education, 46* (1), 41–60.
Medrich, E. A. (1994). *Vocational education in G-7 countries: Profiles and data*. Berkeley, CA: MPR Associates.
Mehran, G. (1992). Iran. In P. W. Cookson, A. R. Sadovnik, & S. F. Semel (Eds.), *International handbook of educational reform* (pp. 283–304). New York: Greenwood Press.
Mehran, G. (1994). Educational reform in post-revolutionary Iran: A shift in policy. In Y. A. Yogev (Ed.), *International perspectives on education and society* (pp. 135–150). Tehran, Iran: JAI Press.
Meier, G. M. (1995). *Leading issues in economic development*. New York: Oxford University Press.
Menchel, R. (1984). Preparation for the world of work. *The Volta Review, 86,* 71–84.
Merriam, S. B., & Caffarella, R. S. (1999). *Learning in adulthood* (2nd ed.). San Francisco: Jossey-Bass.
Metcalf, H. (Ed.). (1995). *Future skill demand and supply*. London: PSI Publishing.
Middleton, J. (1988). Changing patterns in World Bank investments in vocational education and training: Implications for secondary vocational schools. *International Journal of Educational Development, 8* (3), 88.
Middleton, J. (1991). Vocational education and training in developing countries: New directions for the 1990s. *Education with Production, 8* (1), 81–99.
Middleton, J. A., Zidermann, A., & Van Adams, A. (1993). *Skills for productivity: Vocational education and training in developing countries*. New York: Oxford University Press.
Miettinen, R. (2000). Konstruktiivinen oppiminen ja esineellinen toiminta [Constructive learning and concrete action]. *Aikuiskasvatus, 20* (4), 276–292.

Milheim, W. D. (1991). Linking education and industry: Reasons for mutual co-operation. *Tech Trends, 36* (4), 15–18.

Miller, A. (1989). Towards the work-related curriculum. *SCIP News, 25*, ii–iv.

Miller, A. (1993). *Building effective school-business Links: A practical guide to improving quality*. London: Westex Publications Centre.

Miller, A., Cranyhorn, J., Huddleston, P. & Woolhouse, J. (1995). *Making education our business*. Coventry, UK: SCIP.

Miller, A., Watts, A. G., & Jamieson, I. (Eds.). (1991). *Rethinking work experience*. Brighton, UK: Falmer Press.

Miller, G. L. (1990). Vocational education: *A study of factors that influence job placement for vocational graduates of a secondary school. Dissertation Abstracts International*. University of Delaware, Delaware, USA.

Min, W. (1987). *The impact of vocational education on productivity in the specific institutional context of China: A case study. Dissertation Abstracts International*. Stanford University, Stanford, CA.

Min, W. F., & Tsang, M. C. (1990).Vocational education and productivity: A case study of the Beijing General Auto Industry Company. *Economics of Education Review, 9* (4), 351–64.

Ministry of Education of Finland. (2004). *Education and research 2003–2008. Development Plan*. Helsinki: Author. Retrieved July 2005, from http://www.minedu.fi/minedu/publications/online.html.

Ministry of Education of Iran. (1979). *Educational trends and change: A report for the 37th International Conference on Education, Geneva, 5–15 May 1979*. Tehran: Author.

Ministry of Education of Iran. (1990). *The development of education*. Tehran: Author.

Ministry of Education of Iran. (1995). *Principles of the new secondary education system*. Tehran: Ministry of Education, Executive Affairs of New Secondary Education System.

Ministry of Education of Iran. (1996). A report on new secondary education. *International Daily Ettlaat, 581*.

Ministry of Education of Iran (2003). *Annual report of education in Iran*. Tehran: Author.

Ministry of Education Research Council (MOERC). (1994). *A nationwide study on the relationship between technical and vocational education and employment of technical and vocational schools graduates during 1984–1988*. Tehran: Author.

Mitter, W. (1987). *The organisation and content of studies at the post-compulsory level. Country study: Germany* (OECD Educational Monographs). Paris: OECD.

Moussouris, L., & Green, J. L. (1993). *State level co-ordination of education and job training policy development*. Boston, MA: Massachusetts State Council on Vocational Education.

Nasta, T. (1993). *Change through networking in vocational education*. London: Kogan Page.

Nasta, T. (1994). *How to design a vocational curriculum*. London: Kogan Page.

National Commission on Education. (1993). *Learning to succeed*. London: Heinemann.

National Education Association. (1995). *How education spending matters to economic development*. Washington, DC: NEA Research Division.

National Foundation for Educational Research (NFER). (1978). *School and after: A European symposium*. Windsor, UK: NFER Publishing.

Nicholas, E. J. (1983). *Issues in education: A comprehensive analysis*. London: Harper and Row.

Niiniluoto, I., 1992. Taito-kollokvion avaussanat [Opening address of the Skilling Colloquim. In I. Halonen, T. Airaksinen, & I. Niiniluoto (Eds.), *Taito* [Skilling] (pp 5–9). Helsinki, Finland: Suomen Filosofinen Yhdistys

Nikkanen, P. & Ruohotie, P. (Eds.). (1998). *Talousnäkökulmia koulun laadun kehittämiseen* [Economic perspectives on developing the quality of school]. Jyväskylä, Finland: Jyväskylän yliopisto, Koulutuksen tutkimuslaitos.

Noah, H. J., & Eckstein, M. A. (1988). Business and industry involvement with education in Britain, France and Germany. In J. Lauglo, & K. Lillis (Eds.), *Vocationalizing education: An international perspective* (Comparative and International Education Series No. 6, pp. 45–68). Oxford: Pergamon Press.

Nordenhaug, T. D. (2002, October). *The meaning of liberal education*. A lecture delivered for The Great Books Program at Mercer University, Macon, GA.

Nyerere, J. (1967). *Education for self-reliance*. Dar es Salaam, Tanzania: Government Printer.

Office for Standards in Education (Ofsted). (1996). *Survey of careers education and guidance in schools*. London: Author.

O'Neil, J. (1995). On preparing students for the world of work: A conversation with Willard Daggett. *Educational Leadership,* 52, 46–48.

Opetusministeriö. (2000). Koulutus: Tilasto- ja ennakointitietoa koulutuksesta [Education: Statistical and anticipatory data on education]. Retrieved July 2, 2004, from http://www.minedu.fi/opm/koulutus/koulutustilastoja.html.

Organisation for Economic Co-Operation and Development (OECD). (1983). *Education and work: The views of the young*. Paris: Author.

Organisation for Economic Co-Operation and Development (OECD). (1984). *The future of vocational education and training*. Paris: Author.
Organisation for Economic Co-Operation and Development (OECD). (1989). *Economies in transition*. Paris: Author.
Organisation for Economic Co-Operation and Development (OECD). (1993). *Employment outlook*. Paris: Author.
Organisation for Economic Co-Operation and Development (OECD). (1994). *The OECD Jobs Study: Evidence and explanations*. Paris: Author.
Organisation for Economic Co-operation and Development (OECD). (2000). *Transition from initial education to working life*. Paris: Author.
Organisation for Economic Co-Operation and Development (OECD). (2001). *Knowledge and skills for life. First results from PISA 2000*. Paris: Author. .
Organisation for Economic Co-Operation and Development (OECD). (2004). *Education at glance*. Paris: Author.
Owens, T. R. (1986). Using secondary vocational education assessments to enhance excellence in teacher preparation. *Journal of Industrial Teacher Education, 23* (4), 7–14.
Oxenham, J. (Ed.). (1984a). *Education versus qualifications? A study of relationships between education, selection for employment and the productivity of labour*. London: George Allen and Unwin.
Oxenham, J. (1984b). Employers, jobs and qualifications. In J. Oxenham (Ed.), *Education versus qualifications? A study of relationships between education, selection for employment and the productivity of labour* (pp. 41–86). London: George Allen and Unwin.
Oxenham, J. (1988). What do employers want from education? In J. Lauglo, & K. Lillis (Eds.), *Vocationalizing education: An international perspective* (Comparative and International Education Series No. 6, pp. 69–79). Oxford: Pergamon Press
Paczuska, A. (1996). *Skill, qualification and progression: A higher education view* (Occasional Paper No. 12). London: University of London, Institute of Education.
Paris, L. (1989). Career preparation programs for the work world. *Illinois Teacher of Home Economics, 33,* 29–33.
Partee, G. (1994). *Designing quality programs: International lessons on youth employment preparation* (Research Report No. 143). Washington, DC: Maryland University.
Perry, J., & Barnett, C. (1985). *Skills in schools*. Layerthorpe, UK: Longman.
Phelps, L. A. (1998). *Changing work, changing learning: The imperative for teacher learning in the workplace and communities.* Madison: University of Wisconsin-Madison, Center on Education and Work and National Center for Research in Vocational Education.

Phelps, L. A., & Hughes, R. P. (1986). The unfinished agenda: Some implications for research in secondary vocational education. *Journal of Vocational Education Research, 11,* 51–72.

Poikela, E. (1999). *Kontekstuaalinen oppiminen* [Contextual learning]. Tampere, Finland: University of Tampere.

Polachek, S. W. & Siebert, W. S. (1993). *The economics of earnings.* Cambridge: Cambridge University Press.

Poole, V. A., & Zahn, D. K. (1989). Restructuring secondary vocational education: A proposal. *Vocational Education Journal, 64* (4), 39–40.

Prais, S. J. (1981). Vocational qualifications of the labour force in Britain and Germany. *National Institute Economic Review,* November 1981, 47–59.

Prais, S. J. (1989). How Europe would see the new British initiative for standardising vocational qualification. *National Institute Economic Review,* August 1989, 52–54.

Pring, R. (1987). The curriculum and the new vocationalism. *British Journal of Education and Work, 1* (3), 133–148.

Pring, R. A. (1995). *Closing the gap: Liberal education and vocational preparation.* London: Hodder & Stoughton.

Psacharopoulos G. (1979). On the weak versus the strong version of screening hypothesis. *Economic Letters, 4,* 181–185.

Psacharopoulos, G. (1984). The contribution of education to economic growth. In J. W. Kendrick (Ed.), *International comparisons of productivity and causes of the slowdown* (pp. 340–346). Cambridge, MA: Ballinger.

Psacharopoulos, G. (1985). Curriculum diversification in Colombia and Tanzania: An evaluation. *Comparative Education Review, 29* (4), 507–525.

Psacharopoulos, G. (1987a). To vocationalize or not to vocationalize? That is the curriculum question. *International Journal of Education Development, 33* (2), 187–211.

Psacharopoulos, G. (Ed.). (1987b). *Economics of education: Research and studies.* Oxford: Pergamon Press.

Psacharopoulos, G. (1988). Curriculum diversification, cognitive achievement and economic performance: Evidence from Tanzania and Colombia. In J. Lauglo, & K. Lillis (Eds.), *Vocationalizing education: An international perspective* (Comparative and International Education Series No. 6, pp. 257–278). London: Pergamon Press.

Psacharopoulos, G. (1991a). Education and work: The perennial mismatch and ways to solve it. *Vocational Aspect of Education, 114,* 127–132.

Psacharopoulos, G. (1991b). *The economic impact of education: Lessons for policymakers.* San Francisco: ICS Press.

Psacharopoulos, G., & Loxley, W. (1985). *Diversified secondary education and development: Evidence from Colombia and Tanzania*. Baltimore, MD: Johns Hopkins University Press.

Psacharopoulos, G., & Patrinos, H. (1993). Secondary vocational education and earnings in Latin America. *Vocational Aspect of Education, 45* (3), 229–238.

Psacharopoulos, G., & Patrinos, H. (2004). Returns to investment in education: A further update. *Education Economics, 12* (2), 111–134.

Pullen, P., & Startup, R. (1985). General studies and the employer. *Vocational Aspect of Education, 37* (3), 101–105.

Pumfrey, P. D., & Schofield, A. (1982). Working experience and the career maturity of fifth form pupils. *British Journal of Guidance and Counselling, 10* (2), 3–18.

Raffe, D. (1996). European strategies for parity of esteem. In J. Lasonen, (Ed.), *Reforming upper secondary education in Europe. The Leonardo da Vinci Project Post-16 Strategies* (Publication Series B. Theory Into Practice 92, pp. 273–278). Jyväskylä, Finland: University of Jyväskylä, Institute for Educational Research

Redjali, S. M. (1990). Iran. In R. M. Thomas (Ed.), *International comparative education: Practice, issues and prospects* (pp. 364–369). Oxford: Pergamon Press.

Resnick, L. B., & Wirt, J. G. (Eds.). (1996). *Linking school and work: Roles for standards and assessment*. San Francisco: Jossey-Bass.

Richardson, W. (Ed.). (1992). *Work-related teaching and learning in schools: Education and business in partnership*. Warwick, UK: University of Warwick, Centre for Education and Industry.

Robert, Z. (1994). *What employers want: Employer perspectives on youth, the youth labour market, and prospects for a national system of youth apprenticeship*. Philadephia: National Centre on the Educational Quality of the Workforce.

Rolfe, H. (1994). *Employers' role in the supply of intermediate skills*. London: PSI Publishing.

Romer, P. M. (1986). Increasing returns and long-run growth. *Journal of Political Economy, 94,* 1002–1037.

Romer, P. M. (1987). Growth based on increasing returns due to specialisation. *American Economic Review, 77,* 56–62.

Romer, P. M. (1990). Endogenous technical change. *Journal of Political Economy, 98,* 71–102.

Rosenbaum, J. (1995, February). *Preconditions for effective school-to-work linkages*. Paper presented at an OECD/CERI-National Centre on Adult Literacy roundtable meeting on the transition from school to work, Paris.

Rossetti, R., Elliot, J., Price, C. L., & McClay, P. S. (1990). *An examination of factors influencing students not to enroll in secondary vocational education.* Columbus, OH: Ohio State University, Department of Agricultural Education.

Ruohotie, P. & Koiranen, M. (2000). Building conative constructs into entrepreneurship education. In B. Beairsto & P. Ruohotie: *Empowering teachers as lifelong learners.* (pp. 29–45). Tampere, Finland: University of Tampere.

Ryan, P. (1991). *International comparisons of vocational education and training for intermediate skills.* London: Falmer Press.

Saunders, L. (1991). Education, work and curriculum. *Policy Studies, 12* (2), 13–26.

Saunders, L. (1993). The work-related curriculum: The new entitlement? *British Journal of Education and Work, 6* (1), 75–89.

Schneider, C. G. (2004). Practicing liberal education: Formative themes in the reinvention of liberal learning. *Liberal Education, 90* (2), 6–11.

Schoppa, L. J. (1993). *Education reform in Japan.* London: Routledge.

Self, S. & Grabowski, R. (2004). Does education at all levels cause growth? India, a case study. *Economics of Education Review, 23* (2004), 47–55.

Sfard, A. (1998). On two metaphors for learning and dangers of choosing just one. *Educational Researcher, 27,* 4–13.

Shackleton, J. R., Clarke, L., Lange, T., & Walsh, S. (1995). *Training for employment in Western Europe and the United States.* Aldershot, UK: Edward Elgar.

Shanhan, L. M. (1989). *The impact of vocational education on the economic outcomes of the non-college-bound high school graduates of an urban school district. Dissertation Abstracts International.* University of Northern Colorado, Colorado, USA.

Shehab, F. I. (1987). *Attitudes of graduated students, educators, and employers towards technical education in Bahrain.* Unpublished doctoral dissertation, University of Pittsburgh, Pennsylvania.

Shokohi, G. (1995). Relationship between education and employment in small business sectors. *Journal of Educational Sciences, 18* (3), 28–42.

Shuttleworth, E. (1993). *Enterprise learning in action: Education and economic renewal for the twenty-first century.* London: Routledge.

Sihvola, J. (1992). Kreikkalainen filosofia ja käytännön taidot [Greek philosophy and practical skills]. In I. Halonen, T. Airaksinen, & I. Niiniluoto (Eds.), *Taito* [Skilling] (pp 11–34). Helsinki, Finland: Suomen Filosofinen Yhdistys

Silver, H., & Brennan, J. (1988). *A liberal vocationalism.* London: Methuen.

Simmons, V. (1994). *Managing for quality and innovation: A introductory manual for managers of vocational training centres.* Leabrook, Australia: National Centre for Vocational Education Research (NCVER).

Singh, J. S. (1996). Higher education and development: The experience of four newly industrialising countries in Asia. In M. Zaghloul, & G. A. Philip (Eds.), *Higher education in an international perspective: Critical issues* (pp. 142–156). Paris: UNESCO.

Skilbeck, M. (1982). Three educational ideologies. In T. Horton, & P. Raggatt (Eds.), *Challenge and change in the curriculum* (pp. 19–24). London: Hodder and Stoughton.

Skilbeck, M., Connell, H., Lowe, N., & Tait, K. (1994). *The vocational quest: New directions in education and training.* London: Routledge.

Solow, R. M. (1991). Growth theory. In M. Bleaney, D. Greenway, & I. Stewart (Eds.), *Companion to contemporary economic thought* (pp. 393–415). London: Routledge.

Spence, M. (1973). Job market signaling. *Quarterly Journal of Economics, 87,* 355–374.

Spours, K., & Young, M. (1988). Beyond vocationalism: A new perspective on the relationship between work and education. *British Journal of Education and Work, 2* (2), 5–14.

Stasz, C., & Stern, D. (1998). *Work-based learning for students in high schools and community colleges.* Berkeley, CA: National Center for Research in Vocational Education. ED 425352.

Statistic Centre of Iran. (1997). *Report on the 1996s census.* Tehran: MAI.

Statistics Finland. (2002). Labour Market. Retrieved July 11, 2004, from http://www.tilastokeskus.fi/tk/tp/tasku/taskue_tyoelama.html.

Stiglitz, J. (1975). The theory of screening, education, and the distribution of income. *American Economic Review, 65,* 283–300.

Strauss, L. (1967). Liberal education and mass democracy. In R. A. Goldwin (Ed.), *Higher education and modern democracy: The crisis of the few and many* (pp. 73–96). Chicago: Rand McNally.

Stronach, I. (1989). Education, vocationalism and economic recovery: The case against witchcraft. *British Journal of Education and Work, 2* (1), 5–31.

Sultana, R. G. (1990). Schooling for work in New Zealand: Reproduction, contestation and transformation in three high schools. *British Journal of Education and Work, 3* (3), 35–48.

Sweet, R. (1995). *Linking schools and workplaces: Lessons from Australia and overseas.* Port Douglas, Australia: Australian Institute of Training and Development National and International Convention.

Taghipoor-Zahir, A. (1990). *Introduction to the educational and curriculum planning.* Tehran, Iran: Agah.

Talik, J. (1988). Economics of vocationalisation: A review of the evidence. *Canadian and International Education, 17* (1), 45–62.

Thompson, K., & Richard, L. (1996). School-to-career needs business help. *Nashville Business Journal, 12,* 6–7.

Tilastokeskus (2002). *Väestön koulutustaso maakunnan ja kuntaryhmän mukaan kunnittain 31.12.2002. Väestön koulutusrakenne kunnittain 2000* [Levels of education among the population by province and municipality 31 December 2002. Educational structure of the population by municipality 2000] (Koulutus No 12). Helsinki: Author.

Trades Union Congress (TUC). (1989). *Skills 2000.* London: Author.

Trant, A., Branson, J., Frangos, C., Geaney, F. L., Makinen, R., Moerkamp, T., Voncken, E., & Walsh, P. (1999). *Reconciling liberal and vocational education. Report of the European Union Leonardo da Vinci research project on promoting the attractiveness of vocational education (PAVE).* Dublin, Ireland: Curriculum Development Unit

Tucker, I. (1985). Use of the decomposition technique to test the educational screening hypothesis. *Economic Education Review, 4,* 321–326.

Turkle, S. (2004). *Liberal education in the twenty-first century.* Retrieved October 13, 2004, from the Liberal Education, Technology and the Twenty-First Century web pages at http://www.csupomona.edu/~ plin/ls201/polytechnic3.html.

Turner, E., Lloyd, J., Stronach, I, & Waterhouse, S. (1994). *Education-business links in Scotland: Patterns of partnership.* Edinburgh, UK: Scottish Office Education Department.

UNESCO. (1974). *Revised recommendation concerning technical and vocational education.* Paris: Author.

UNESCO. (1984). *Regional consultation meeting on the Asian Programme of Educational Innovation for Development, 9th Bangkok Seminar, Thailand, March 20–26 1984.* Paris: Author.

UNESCO. (1986). *Trends and issues in technical and vocational education. The integration of general and technical and vocational education.* Paris: Author.

UNESCO. (1989). *Convention on technical and vocational education.* Adopted by the General Conference of UNESCO at its twenty-fifth session, Paris 10 November 1989.

UNESCO. (1991). *Regional counsultation meeting on the Asia and Pacific Programme of Educational Innovation for Development (APEID): Chaing Mai, Thailand, August 20–27, 1990.* Paris: Author.

UNESCO. (1992). *A literate world.* Paris: Author.

UNESCO. (1995). Education for all: Making it work. *UNESCO Sources, 66,* 6–8.

UNESCO. (1999). UNESCO International Programme on Technical and Vocational Education and Training. General Conference 30th Session, Paris 1999. Retrieved July 5, 2004, at http://www.unevoc.de.

UNESCO. (2004). *Education for all: The quality imperative* (EFA Monitoring Report 2005) Paris: Author.

UNESCO. (2005). *Global education digest 2005. Comparing education statistics across the world*. Montreal, Canada: UNESCO Institute for Statistics.

Useem, M. (1995). Corporate restructuring and liberal learning. *Liberal Education, 81* (1), 18–23.

Van der Krogt, F. J. (1998). Learning network theory: The tension between learning systems and work systems in organizations. *Human Resource Development Quarterly, 9* (2), 157–177.

Van Steenwyk, N. (1987). *Trade certification and job placement program in Honduras: A pilot project*. Washington, DC: Agency for International Development.

Warwick, D. (Ed.). (1989). *Linking schools and industry*. Oxford: Blackwell Education.

Warwick, D. (1995). Schools and businesses. In A. MacBeth, D. McCreath, & J. Aitchison (Eds.), *Collaborate or compete? Educational partnerships in a market economy* (pp. 171–182). London: Falmer Press.

Watson, K. (Ed.) (1983). *Youth, education and employment – International perspectives*. London and Canberra, Australia: Croom Helm.

Watts, A. G. (1983). *Education, unemployment and the future of work*. Milton Keynes, UK: Open University Press.

Watts, A. G. (Ed.). (1983). *Work experience and schools*. London: Heinemann.

Watts, A. G. (1993). Connecting curriculum to work: Patterns, current initiatives and future issues. In J. Wellington (Ed.), *The work-related curriculum: Challenging the vocational imperative* (pp. 41–55). London: Kogan Page.

Wellington, J. (1986). The rise of pre-vocational education and the needs of employers. *Vocational Aspect of Education, 38* (99), 17–22.

Wellington, J. (1987a). Employment patterns the goals of education. *British Journal of Education and Work, 1* (3), 163–177.

Wellington, J. (1987b). *Skills for the future?* Sheffield, UK: University of Sheffield, Institute for Information Technology.

Wellington, J. (Ed.). (1993). *The work-related curriculum: Challenging the vocational imperative*. London: Kogan Page.

Wellington, J. J. (1989). *Education for employment: The place of information technology*. Windsor, UK: NFER-NELSON

Wenger, E. (1998). *Communities of practice. Learning, meaning, and identity*. Cambridge: Cambridge University Press.

Weston, P. (1996). *Learning to work: An overview*. Slough, UK, NEFR.

Willis, R. J., & Rosen, S. (1979). Education and self-selection. *Journal of Political Economy, 87* (5), 7–36.

Wilms, W. W. (1988). Captured by the American Dream: Vocational education in the United States. In J. Lauglo, & K. Lillis (Eds.), *Vocationalizing education: An international perspective* (Comparative and International Education Series No. 6, pp. 81–93). Oxford: Pergamon Press.

Wilson, B. (1987). *Education, work and youth policy.* Canberra, Australia: Curriculum Development Centre.

Wilson, R. (1995). Skill needs to the end of the century. In H. Metcalf (Ed.), *Future skill demand and supply* (pp. 6–32). London: PSI Publishing.

Woodhall, M. (1987). Earnings and education. In G. Psacharopoulos (Ed.), *Economics of education: Research and studies* (pp. 209–217). New York: Pergamon Press.

Woodhall, M. (1997). Human capital concepts. In A. H. Halsey, H. Lauder, P. Brown, & A. S. Wells (Eds.), *Education: Culture, economy, society* (pp. 219–223). Oxford: Oxford University Press.

World Bank (1999). *World development report 1998/99: Knowledge for development.* Oxford: Oxford University Press.

World Employment Report. (2001). *Life at work in the information economy.* Geneva: ILO.

Wray, M. J. (1982). *Employer investment in schemes of unified vocational preparation.* Windsor, UK: NFER Publishing.

Wright, C. A. (1988). Curriculum diversification re-examined – A case of Sierra Leone. In J. Lauglo, & K. Lillis, K. (Eds.), *Vocationalizing education: An international perspective* (Comparative and International Education Series No. 6, pp. 115-126). London: Pergamon Press.

Wössmann, L. (2002). *Schooling and the quality of human capital.* Berlin, Germany: Springer.

Wössmann, L. (2003). Specifying human capital. *Journal of Economic Survey, 17* (3), 239–270.

Zwerling, L. S. (1992). Liberal learning and the world of work. *New Direction for Adult and Continuing Education, 53,* 99–113.

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Education, Training and the Economy: Preparing Young People for a Changing Labour Market is a critical and reflective synthesis of existing literature on education and training intended to prepare the young for a changing labour market and on accountability in education and training. It stimulates thought on ways of addressing the problems involved in the organisation of education in industrial and developing countries. Its discussion of European training focuses on questions of the UK educational system which differ from those considered in the European debate on education but which have had a broad impact outside Europe.

The examples and cases considered in the book were taken from the educational systems of Iran and Finland with a view to illustrating forms of youth education developed in distinct cultural contexts. Additionally, the book reviews the evidence for the economic impact of education and training in the past thirty years and uses published research to draw a number of lessons. Its general conclusion is that liberal education and technical and vocational education and training, pursuing different but not mutually exclusive objectives, generate human and social capital to serve the needs of the world of work.

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