

LINKS BETWEEN GENERAL AND VOCATIONAL EDUCATION: DOES THE ONE ENHANCE THE OTHER?

MARY JEAN BOWMAN

Abstract – The answer is YES. The hallmark of successful schooling is the creation of portable skills and efficiency in future learning. This paper examines the linkages between and within levels of schooling, and between education in schools and apprenticeships and other forms of work-associated training. It shows that elementary schooling is of too great a vocational importance to risk feeding children vocationalism. School-work programmes are rarely effective pedagogy, but theory is an important element in apprenticeships. Quality counts heavily whatever the educational content and setting. And the 'general' elements in skill development are critical for both individuals and societies in a world of change.

Zusammenfassung – Die Antwort auf die Frage, ob bei den bestehenden Verbindungen zwischen allgemeiner und berufsbezogener Bildung, die eine die andere verbessert, ist ja. Als Anzeichen für eine erfolgreiche Schulbildung gelten übertragbare Fähigkeiten sowie Effizienz beim späteren Lernen. In diesem Bericht werden die Verknüpfungen zwischen den und innerhalb der verschiedenen Schulebenen, zwischen Erziehung an Schulen und in der Lehre und anderen Formen von berufsbezogener Ausbildung untersucht. Es wird der Beweis erbracht, daß die Elementarschule von zu großer berufsorientierter Wichtigkeit ist, um das Risiko einzugehen, Kinder mit berufsbetonten Programmen zu überfrachten. Schulprogramme zur Berufsbildung sind nur selten pädagogisch wirksam, während die Theorie einen wichtigen Bestandteil der Lehre bildet. Der Qualität wird ein hoher Stellenwert beigemessen, unabhängig von dem erzieherischen Inhalt und dem Umfeld. Darüberhinaus sind 'allgemeine' Elemente in der Entwicklung von Fähigkeiten für den Einzelnen als auch für ganze Gesellschaften in einer Welt, die sich im Wandel befindet, entscheidend.

Résumé – La réponse est oui. Une scolarité efficace est marquée par la transmission de compétences utiles et efficaces pour un apprentissage futur. Cet article examine les liens entre les niveaux de scolarité et au sein de ces niveaux, entre l'éducation dispensée par les écoles et un apprentissage ou d'autres types de formations axées sur le travail. Il montre que l'enseignement élémentaire est d'une importance trop grande pour la formation professionnelle pour risquer de surcharger le programme des enfants d'éléments professionnels. Les programmes scolaires à vocation professionnelle sont rarement efficaces pédagogiquement, alors que la théorie constitue un élément capital dans un apprentissage. La qualité compte considérablement quels que soient les structures et les contenus éducatifs. En outre, les éléments généraux du développement technique sont cruciaux pour les individus et les sociétés d'un monde en mutation.

I. Introduction

A decade and a half ago the Costa Rican Ministry of Education published a National Plan for Educational Development on which there had been intensive work for several years. Their starting point was in two fundamental propositions: 1. public education should serve socio-economic welfare and development (not merely study for its own sake), and 2. strategies for educational development should improve compliance with their constitutional precepts in providing equality of educational opportunity to all. These propositions might seem to have universal validity across countries, although they are not universally accepted. In particular, the second proposition is flagrantly dismissed in some countries, and freedom of choice as an aspect of equality of educational opportunity is often set aside.

The two general propositions in the Costa Rican document are treated here, nevertheless, as universally relevant even if not universally accepted values. The problems that arise are then in interpretations and in reconciliations (if needed) of the two goals. The principal theme of the present paper calls primarily for an examination of what proposition 1 would imply with respect to the formation of general and of vocationally specialized skills.

Starting from proposition 1, three general, partially overlapping, questions will be considered:

- a) What is the most readily learned and most efficiently taught in institutions we call schools as opposed to other agencies or the work place?
- b) At what age and level of prior schooling does vocational specialization (wherever acquired) become a sound option?
- c) In what ways may the greatest potential strengths of school and of work-place in building skills be joined?

These questions will be addressed under more specific headings in Parts II and III. Before going further, however, it is necessary to sort out some basic concepts and terminology.

Schooling, Education and Learning

Learning of the most fundamental sort starts with birth (or before birth) and continues with or without intent throughout most of a lifetime. Education has been defined by Lawrence Cremin as purposeful activities directed toward learning. This includes all sorts of schooling and training programmes, and even the investments of time made in choosing an initial job that provides learning through experience even though it offers relatively low earnings at first. Schooling is thus only a part of education, and, for better or worse, what is learned in school is both more and less than planned

instruction. The distinctions between schooling, education, and learning must not be slurred over.

What is 'Vocational'?

The word 'vocational' has acquired a variety of meanings. Most misleading is the tendency to treat as 'vocationally' irrelevant any education or training that is not specialized to particular sorts of work; what is usually labelled 'general' education is an essential part of preparation for any vocation. In what follows here the phrase 'vocationally specialized' or simply 'specialized' training will be used to distinguish between such specialization and the general components in vocational preparation.

The other sort of confusion arises primarily in failures to distinguish between vocationally oriented programmes and virtually any courses, especially in elementary schools, that are not focused on 'academic' subjects. This tends to mean 'manual training' for boys. There is less inclination to label home economics or health sciences for girls as 'vocational' given the pervasive biases in perceptions of productivity in home-making versus labour markets.

Also distorted is the failure to recognize that at high levels 'academic' education may be and often has been distinctly 'vocational' (as it clearly was in preparation for the foreign service at Oxford and Cambridge in earlier years). Such preparation, however 'academic', is then vocationally specialized.

Skill Portability and Learning Power

Whatever else it may be, the hallmark of a successful schooling system must be found in the portability of skills acquired in the schools and in how far schooling is contributing to subsequent efficiency in learning. By portability is meant the ability to carry a substantial component of one's skills from one situation or agency and from one job to another. By learning power is meant the ability to deepen and widen one's skills in the post-school years, whether through subsequent training or learning through experience. To criticize a school because it does not turn out people who can go directly into a skilled job without any further learning is to invite costly mistakes and rigidities in both the institutions that contribute to the formation of human resources and the labour markets that utilize those resources.

Employers know this, even when some 'experts' on educational and manpower planning do not. Even in an economic 'steady state', in which there

was little change, both portability and learning power would be important for the post-school development of individual skills and for adjustments to changes in individual circumstances. They become of critical importance in a world of change. This is a matter not only of individual career development but of welfare and economic progress in a society at large.

II. The Vocational Importance of Elementary Schools and the Fallacy of Their Vocalization

The Apprentice, the Scholar, and the Common School

The fundamental functions of literate education are record keeping and communication across space and time. Initially, literate education was specialized vocational training. The early literates served as record keepers in the monasteries and the secular bureaucracies of East and West even while those at the tops of elite structures were still illiterate. In these early stages literacy was acquired almost entirely through some form of apprenticeship. For males in the West at least, most early literate education developed in direct association with the monastic utilization of 'scholarly' skills. Opportunity to acquire literacy was comparatively open but could mean commitment to an entire way of life. In China also early literacy might be acquired as a monastic (Buddhist) apprentice, but there was also the Confucian tutor, with or without a vocational destination in services to advanced political bureaucratic organizations. And Chinese education of early bureaucrats was democratic in that each extended family might have its scholar, who was often poor but was supported by his kin in a respected role even when he did little more 'practical' than write stylized poetry. At the least, however, he would probably use his literacy skills as a village scribe (familiar in some of the LDCs even today). Specialization, yes, since these were still scarce skills, but not necessarily 'vocational' in any of the meanings we commonly attach to that word.

Only with the arrival of the printing press could literate education spread widely among a population, and this does not happen over night. In the now educationally advanced world, the common school came well behind the development of literate higher or religious cultures and even well behind the invention of printing. It is no accident that Weber should be known for two major contributions to the understanding of the roots of economic development in the West, both of which are associated with the spread of literate education: the 'Protestant ethic' and the development of systematic accounting. To Weber the Protestant ethic was seen primarily as a work ethic, but it was the Protestant revolt that brought reading of the Bible into the

household, thus laying the foundation for literate education of both sexes.

Elizabethan England saw the beginning of 'industrial schools' for the poor, which provided 'technical education' of a sort. But they were based on an exploitative semi-skilled apprenticeship that had more in common with the workhouse than with education. The first real steps toward development of a common school literate education in England were in the Sunday schools. This entailed no loss of the labour of the children, who were to be improved morally and made more industrious. As England became more prosperous, non-industrial and trade activities rose in relative importance, the value of 'literary' schooling came to be more widely appreciated, and far-sighted working-class parents became able and willing to pay a few pennies for the more general sort of education given by the superior charity and other elementary schools (Anderson, 1965, p. 329). Yet an apprenticeship system persisted in English factories well into the 19th century. It was only with the Factory Act of 1833 that differentiated schools began to emerge out of prior job training and poor laws, to teach reading and writing to ordinary boys and girls. England progressed rapidly over three centuries not because she was a leader in formal popular schooling but rather because of the many auxiliary stimuli to ambition and competence that accompanied and propelled the industrial revolution in that country. The vigour of non-institutional educational life in England over the seventeenth and eighteenth centuries was well described by Armytage (1965).

Usually there was no training in literacy in British apprenticeship. Though some guilds and some masters were exceptions and literacy was a prerequisite for some apprenticeships, thousands of Poor Law apprentices were exploited in 'blind alley' occupations. The Massachusetts Bay colonists sought to protect their new commonwealth from such evils. They 'insisted (1) that masters must teach or "cause to be taught" their apprentices to read; and (2) that apprentices must be trained in "employments which may be profitable to the Commonwealth"' (Seybolt, 1917). Apprenticeship was to be an educational institution, not a system of exploitation. The two main propositions underlying their 1642 ordinance are remarkably like the principles cited at the start of this essay from the Costa Rican educational development plan of 1973, although of course in a very different historical context with a strong moral and religious tone along with practical relevance. The Plymouth law of 1671 ran in the same vein, also linking ability to read with skill in an honest calling. Literacy and vocational training were seen as complements, not substitutes. But not all masters could read, and gradually free town schools were established. Thus apprenticeships and the schools evolved together for boys, who frequently had their schooling at night so that this would not interfere with their work. Girls more often attended schools in the day time, but at first to learn to read only, whereas

boys were required to 'read and wright and siffer.' Out of such beginnings came the American common school, serving all and independent of any particular career. It came later in the southern colonies and in Western Europe and Asia.

In Japan also there were of course apprenticeships in both feudal courts and Buddhist monasteries. Some time before the Meiji Restoration a vast array of educational services had grown up in the Buddhist temples, and these *Terecoya* schools provided the foundations of the new public system of elementary education introduced in 1872 – a system that expanded rapidly both horizontally and vertically over the ensuing hundred years.

Elementary Schooling in LDCs and in Advanced Countries

The heterogeneous array of countries often lumped together as the 'Third World' includes both societies that have had a written tongue over many centuries and those in which the indigenous language had no written form until recent years (and in which there is little written literature even today). It includes also societies in which traditional craft skills were highly developed and required great skill and precision, but others in which there is little such inheritance. Educational priorities and what can and should be provided in schools or in other agencies must vary greatly with these contrasting backgrounds. Sub-Saharan countries present some of the extreme examples, but they are not alone in having a limited base on which to build in a world of change and international interdependencies. For the moment let us consider the relatively extreme sort of situation. Several facts mark important contrasts with the early development of literate education in the North. Separately and in combination these facts present some critical questions for educational policies. Among the facts are the following:

1. Scores on achievement tests are much lower among pupils in the LDC elementary schools than in those of advanced countries. This has effects throughout subsequent years of schooling and on out-of-school learning. It both affects and reflects challenges that they must face.
2. There will be a smaller range of post-school training and learning opportunities in the private and even in the public economy than was available in supporting human resource development in most of the countries of the northern hemisphere.
3. Time scales have changed, external environments are more volatile and political impatience is pervasive. This is making it increasingly difficult to pursue policies directed toward a more distant rather than an immediate future. Quick fixes and simplistic 'solutions' gain too-ready acceptance in this atmosphere.

4. The philosophical foundations and religious institutions that undergirded early educational developments in both the East and the West have no parallels in many of the indigenous societies of the less developed world. This is closely associated with point (3).
5. The richly stimulative environments that characterized earlier innovative developments in the North are missing in most of the LDCs today, where energies are more often directed to political conflict than to inventive endeavour and institution building.
6. Mass literate education, both verbal and mathematical, is more important today because of the scale of economic and governmental activities and the essentiality of communication at a distance with people not personally known, both within and between countries.

Quality, Relevance, and the Unimportance of Subject Matter in Elementary Schools

The last few years have seen an explosion of concerns about quality in the elementary schools of LDCs. Along with this has come a growing emphasis on pre-school education. Yet at the same time have come rising population pressures, heavy international debts, and in many cases declining financial resources for education.

Meanwhile, there has been a swelling of the perennial concerns and arguments about the 'relevance' of schooling that has reached down even to the primary levels. (On 'relevance', see Bowman, 1987.) There has been an extraordinary revival of agricultural studies even at the primary level of schooling in the most backward countries, re-instituting something very like the previously despised manual and agricultural training of the colonial era. This is in direct conflict with the emphasis on quality, not only because of the time and resources diverted from the foundations of primary schooling but also because of the lack of qualified teachers and of the want of interest among both teachers and pupils. Moreover, as progress in educational development reduces the proportions of over-age pupils in the primary schools the introduction of specialized pre-vocational training into the curriculum becomes increasingly inappropriate.

No one is likely to challenge the simple proposition that quality in the sense of preparation for subsequent learning and doing is a 'good', or that most of the primary schools in the most backward countries are short on that good. Neither is anyone likely to challenge the importance of 'relevance' as long as there is a definition of what is relevant to what. When it comes to policy decisions, one must ask also whether whatever may be agreed to be 'relevant' is best pursued in organizations we call schools in any

case. Where should we be looking for the provision of quality and of relevance? These are the core questions behind the surface disputes at both elementary and secondary levels. They should be more easily resolved for elementary than for subsequent schooling.

In the primary school years what is most important is the stimulation of learning. Quality and *relevance to pupils* are joined in the production of effective learning. Whatever the subject content, the communication to pupils of relevance in *their* terms is essential for fundamental learning, and a skilful teacher may stimulate motivation and learning of almost any topic. To do this requires, however, not only knowledge on the part of the teacher but also the transmission of some enthusiasm. And it requires at the least supportive policies that permit teacher creativity. Didactic materials and teacher training must be oriented to pupil motivation if real learning is to be fostered across the land. This may call also for encouragement of some local differentiation in illustrations, though not in skills acquired. It most decidedly does NOT call for pre-vocational agriculture in the curricula of rural primary schools. But what, it may then be asked, about relevance to society?

Societal relevance in primary schooling has two broad dimensions: contributions to future productivity and adaptability in home and labour markets, and the distribution of opportunities among the population.

On the first count, most relevant is the provision of functional literacy, both verbal and mathematical. More difficult, but also in part a responsibility of the schools, must be the encouragement of concentration and self-discipline, which in the end gives people self-reliance and freedom in constructive self-expression. This is not easy to accomplish anywhere, as is manifest in problems faced by advanced countries as well as LDCs, and it will be especially problematic where the teaching cadres themselves lack these qualities.

Schooling at all levels, including primary school completion, can greatly enhance the ability to learn and to adjust and participate in change. This has been clearly demonstrated in studies of relationships between agricultural innovation and schooling in many countries. Though more limited, research on such relationships in non-agricultural enterprise has given the same results. But these results depend on the acquisition of generalized capabilities. Pre-vocational elementary agriculture is typically poor agricultural training and has no relationship to progress in agriculture.

On the second count, the equalization of opportunity, the pre-vocational study of agriculture in elementary schools has a sorry record. While agricultural progress can and will enhance general economic progress, such developments do not normally retain rural people in the countryside despite high rural birth rates. Unless the inclusion of agricultural studies in the elemen-

tary grades so limits the time and effectiveness of the basic general studies as to disqualify pupils for urban life, the rural-urban migration will persist anyway. The migrants may be an even greater 'problem' in the perspective of urban dwellers who wanted them to stay back home. And however one looks at it, the arguments for agricultural studies in rural primary schools carry an odour of the earlier exploitation of the poor in the industrial and Sunday schools of 17th- and 18th-century England. Agriculture as a vocational subject in the primary schools falls down on both societal efficiency and equity grounds.

Having Things Both Ways

The evidence against vocational agriculture as a curriculum theme in the rural primary schools of economically and educationally backward countries is strong. But this does not mean that there can be no place for agriculture or agriculture-related subjects in general elementary curricula. Indeed, the very fact that it is pedagogy rather than course topics that is important for both quality and relevance to pupils and to society means that there is scope for the introduction of topics relating to agriculture, health, food and nutrition into general studies of language and mathematics. The door can be open to special school projects, some of which could benefit from parental involvement. Even a school garden, if it is not (as many are) a bad example, can be used for pragmatic lessons in arithmetic, for example. And ten-year-olds can learn quite a lot about sanitation and nutrition that would be of direct and immediate interest to their mothers if the latter could be brought into the school project. Quality schooling and 'relevance' to pupils, parents and society does not have to be remotely abstract. Indeed, how arithmetic is learned and handled in traditional jobs and how this is related to the way it is taught in schools could turn into a highly instructive and interesting project. Viewed in such a perspective it is possible to 'have it both ways'. The same could be said of science instruction in elementary schools, both rural and urban. The problem, of course, is not only in the limitations of teachers, but in the habits of thought, the bureaucratic constraints, and the limited capabilities and imagination of most teachers of the teachers and most administrators of the bureaucracies.

III. Skill Heterogeneity and Specialization in the Post-Primary Years

Types of Capabilities, Ranges of Applicability, and the Loci of Skill Formation

Elsewhere (Bowman, 1979) this author has found it useful to classify skills and their ranges of applicability along two dimensions, one of which comes directly from Becker (1964, 1975). These two dimensions are: 1. the continuum in degrees of generality or specialization in occupations or activities, and 2. the range from skills that can be utilized only in a single firm (firm-specific) to those that would have equal value in more than one firm, wherever they may be acquired (firm-general). Household activities as well as activities in labour markets or public agencies are included but are not distinguished by either of these criteria.

General and specialized skills. At the 'general' extreme, cutting across all societies, are the capabilities acquired by normal human beings in all cultures, without any deliberate investment decisions – the basic physical manipulations and at least some rudimentary ability in oral communication. Beyond such universals come those that are universal to virtually all members of a society or culture – how to use chop sticks in China or how to use a fork or to screw and unscrew a bottle cap in the West. (In Kenya around 1960 how to use a fork was specialized to the roles of the new African statesmen and their wives; special classes were set up for the latter.) Basic verbal and mathematical literacy were specialized skills in earlier ages when possessed by only a few, and for that very reason they were in limited demand. But in the long run the structuring of economic activities depends upon as much as it reflects the distribution of these basic skills. They have supported the increasing complexity and relative impersonality of modern societies and they are made necessary by these changes. Life moves today at a new scale in time and space, demanding virtually universal command of the 'three Rs' as the ultimate 'general' skill needed for effective participation of individuals and of entire societies. Meanwhile, what constitutes 'functional literacy', either verbal or mathematical, comes to mean progressively higher levels of competence. This process is reflected in the expansion of formal schooling around the world.

Carpentry exemplifies a specialized skill in that it entails a cluster of closely related skills and associated productive capabilities. Operating a power loom is more specialized. At higher levels, training to become a physician is unambiguously specialized training in that it does not carry over into other major occupations, but today most physicians in the West are further divided into particular fields of expertise: a dermatologist, an orthopedic surgeon (and within this a specialist on the hand), a tropical vitriologist, and

so on. All of these specialists share a common basic medical training and an associated ability to communicate with one another. Thus the common elements within the physician cadres are the 'general' medical skills, and rural doctors along with most doctors in small poorer societies must be 'general practitioners'. Among the practical questions in public policy relating to education and training will be how far to push specialization of skills at any given level of education. This must be at the heart of decisions concerning vocational education at secondary as well as at higher levels, and whether in formal schools or in other agencies and settings. An equally critical question must be when it makes sense to rely on specialists from other countries, as is done, for example, by most countries when faced with crises on oil platforms in ocean waters and by some in dealing with off-shore oil spills. Public policies in small developing countries must face such considerations repeatedly, even in the importation of foreigners to aid in the provision and improvement of science teaching in the secondary schools. Most countries may want their own civil engineers, but not necessarily their own hydraulic engineers. Chung (1987) has written of the importance of consultant trainers to help Korean engineers acquire 'know-how' needed to work skilfully with equipment imported from abroad. General skills of diverse kinds (in the Chung example basic engineering and a command of English) are an essential foundation for further learning from the specialists, whether domestic or imported. Thus most 'general' skills have the two critical characteristics emphasized throughout this essay. They are *portable* in themselves and as components of more specialized packages of skills, and they are a base for *efficiency in further learning*.

Firm-general versus firm-specific skills. This categorization is what is usually called simply general versus specific human capital in the modern theory of investment in human beings (Becker, 1964). It is a subtle distinction which has little relation to the specialized-general categorization and even less to the extent of education and training provided in business firms or government agencies. Although most general skills will also be 'firm-general', they may be acquired through training programmes in a particular firm so long as the trainees can carry their skills elsewhere and bear the training costs. Such trainees 'pay' by foregoing initially higher wages in anticipation of increased future earning power. The important distinguishing feature of firm-specific human capital is not in whether the training occurs in the firm, but rather in the extent to which the firm bears the costs and recoups the return later. The recoupment is through paying the earlier trainee less than his subsequent marginal product but more than he could earn in another agency or enterprise.

Let us suppose, as often is the case, that the learning of a particular skill or cluster of skills can be done much more efficiently in a firm than in a

school, yet the competitive situation is such that once their programme is completed the trainees could easily find employment elsewhere and that many would in fact do so. Would the firm then provide training? The answer will depend upon whether the employees bear the initial costs in partially foregone earnings during the learning period. This is one of the many situations in which labour-market policies affecting wages may impinge quite directly on relationships between what is learned in schools and what is in direct association with employment.

Following upon Becker's seminal treatment of general and specific components of human capital came discussions concerning what might be the nature and extent of the firm-specific skills. At first attention was focused on the nature of skills themselves, often with the conclusion that firm-specific human capital would be relatively minor in competitive markets. Rosen (1972) pointed to the effectiveness of a team of workers (blue- or white-collar) who have come to know each other and have worked out personalized ways of co-operative production. The value of a member of such a team is likely to exceed his value in a new environment. A related example is the increased value of services of a secretary who knows with whom her boss is in most frequent business contact both in and outside the firm and who knows the firm's internal structuring of communications and reporting. But such firm-specific aspects of human capital could not be created by any sort of explicit training elsewhere. They raise no issues for human investment decisions except in so far that employers may be very interested indeed in the potential of school graduates for learning and adapting on the job.

The importance of institutional structures for the incidence of firm-specific skills was largely ignored in most of the early literature on this subject (Bowman, 1965, was an exception). But there has long been a challenge from 'internal labour market' theorists and most recently from work by labour economists on 'contract theory'. Although not usually directed to the identification of 'firm-specific' skills, these approaches focus on what was left in a 'black box' by the Becker and the Rosen theoretical formulations. Most simply and fundamentally, tenure systems that permit redistributions of earnings over a life cycle can sometimes institutionalize worker sharing of initial training costs by ensuring that with rising seniority the worker will have both greater future employment security and higher earnings than he could get if he were to seek work at the lower tenure he could claim elsewhere. This has the effect of creating an inverse institutional variant of firm specificity in human capital quite aside from any firm-specificity of the underlying skills. The Japanese *Nenko* system has been a prime example, with the unquestioned effect of encouraging systematic programmes for improvement of the skills of employees to whom the firm has

seniority commitments. But the uniqueness of the Japanese system in this respect has been greatly exaggerated. What is of importance is the fact that labour market policies and institutional arrangements can encourage or discourage investments by firms in the formation and improvement of the skills and performance of their employees. Equally important is the fact that these are long-term, not short-term, human development processes.

Some Critical Questions about How Much Specialized Training and Where

The evidence against vocationalization of primary school curricula even with reference to rural communities in the most backward regions is so strong as to make movements in that direction almost incredible. But questions and answers become much more difficult as we consider curricula further up the schooling and the age scales. There are two distinct issues: how early should specialized training begin, and in what agencies under what auspices?

It is much easier to expand schools than to change the socio-economic environments in which the schools must operate, including the labour market institutions that affect both out-of-school formation of human resources and the utilization of the capabilities of youth coming out of the schools. One of the results of this fact has been an inclination to expect of schools far more than they could possibly deliver – whether in terms of social mobility (Anderson, 1961) or of the preparation of finished human skill packages. Attempts to translate into appropriate strategies the proposition that education should serve in support of national socio-economic development can be elusive. The temptation to think simply in numbers, to look to projections of manpower requirements for answers, and to discount what might better be done in agencies other than the public or publicly sponsored schools has been pervasive even in international agencies. The following overlapping questions call for attention in this connection:

1. Can or should we attempt to predict particulars of skill demands in future years as a guide to educational policy in the schools?
2. How may we prepare young people not just for some predicted labour market demand in, say, 1990 or 1995 but for forty or more changing years on into the future?
3. What insights can we draw that may have widespread validity from experiences with ‘diversified’ or ‘vocational’ secondary education?
4. What is most readily learned and most efficiently taught in institutions we call schools versus in other agencies and in the work place?
5. In what ways may the greatest potential strengths of regular schools, of shorter-course proprietary schools and of training in the work place be joined?

6. What labour market policies might improve both the formation and the utilization of human resources at work?

The sixth question is included because of its great importance in the face of policies in many countries that can be pernicious in their effects, often in direct contradiction to the presumed intent of their propagators and supporters. But this is also a question that is best addressed case by case and will not be pursued further here. The other questions will be taken up in groups, starting with the first two.

General and Specialized Education for the Future

There is a close association between the tendency to translate the goal of designing secondary-school curricula to serve the national interest into a prescription for vocationalization of secondary schools and the tendency to look to manpower planning for quantitative answers.

Clearly there are some spheres in which manpower planning to as far as the year 2,000 (twelve years from the present) may be desirable. Two of these are the development of human resources for education and for health, although in both cases it must be important to include institutional flexibility and to be ready to innovate in the combinations of services for which people are being trained. Frequently it has been assumed that the emphasis on manpower planning in relation to educational decision-making was Soviet inspired. In fact, however, Mr. Komarov, who was chosen in 1963 to prepare a statement for the Soviet Union on this topic, stated unambiguously that manpower planning had been a failure except where government specifications of desired services could provide the guiding rules and the measure of success. For some time, nevertheless, the World Bank stipulated that education projects which it financed should include as background material projections of national manpower requirements. Some countries, notably Tanzania, strove conscientiously to comply; it does so no longer. Indeed, things have turned around most decidedly at the World Bank, where cost-effectiveness criteria closer to those used in assessing other sorts of investment have taken hold in education as well. Old views still hang on, nevertheless, as is illustrated in the 1987 article by Benson on 'The Planning of Vocational Education'.

The real issue is not whether there is a place for manpower planning. One must ask what manpower projections and planning are for, what time horizons are set, and whether they are oriented to decisions in the educational system per se or to quite other sorts of training programmes.

A serious flaw in the manpower approach, a flaw that can be and has been severely damaging in some countries, has been the tendency to think of

graduates of one or another curriculum as finished skill packages. Commonly no attention has been given to the fact that young people coming out of the schools and other training agencies could look ahead to forty or more years in which much would change. Both portability and the ability to learn with experience are neglected in the manpower 'how-to-do-it' manuals. Yet in a long view it is on just such criteria that planning should be focused.

The secondary (and junior college) technical education that built up Japan's extraordinary economic progress over the 1960s and 1970s did exactly this. The importance of developing increasing verbal and mathematical skills was never neglected. At the same time, there were built into the technical curricula theoretical foundations for clusters of technical skills, thus providing both high degrees of skill portability within expanding skill clusters and the ability to progress in greater depth with experience in more specialized areas. But the technical schools did not alone produce the skilled and adaptable labour force that made Japan's industrial performance so remarkable. Those schools were operating in an unusually supportive context. First, the young people entering the technical schools had a foundation in nine years of solid primary and junior secondary education, and they competed for entry to the technical schools (in contrast to agricultural and commercial curricula, which enlisted matriculants less selectively). Second, most of the graduates from the Japanese technical upper secondary schools entered large firms in which they were expected to be adaptable, and they were moved across what would be regarded in the West as distinct occupations often under labour union protection. No other country could simply import the Japanese model, which is itself changing. And to attain anything approximating to Japanese quality in elementary and lower secondary schooling must loom as a horrendous task for most LDCs. But underlying the Japanese story are some fundamental principles that can have wide applicability even in quite different national situations.

Portable Quality and Success in Specialized Education

Issues and policy options concerning the appropriate nature and place of vocational or 'diversified education' in secondary schools have been persistently debated. Recently they have been more carefully and objectively examined than heretofore. Conclusions of these studies have usually come out unfavourably, but there are several grounds for challenging some of the common interpretations. A frequently used criterion has been the tidiness of fit between the presumed goal of the curriculum and the jobs of graduates, and by this test many programmes fail. But is this a valid criterion? Often the complaint is that youth insist on going on to higher education, whereas this was not the intent of the programme.

Especially interesting may be some of the findings on achievement tests in the so-called 'academic' and the diversified or vocationalized curricula. Results on these tests have been mixed. Thus far they are apparently negative for vocational and for 'vocationally biased' curricula where basic educational quality at primary and junior secondary levels was low. But there were some remarkably good results even on academic tests in comparisons between secondary academic and secondary diversified (INEM) schools in Colombia (Psacharopoulos and Loxley, 1985). That diversified curriculum schools are more expensive has been demonstrated again and again, however, and usually they do not come out well in benefit-cost comparisons that relate social costs to subsequent earnings. This fact is disturbing, though it is not in itself an unambiguous negative indicator given the inevitably faulty measures of societal in contrast to individual costs and returns.

However measured, it seems that the success of diversified secondary-school education depends first of all on the strength of the prior basic schooling and the continuing quality of the general as well as the specialized component in the secondary curriculum. Quality and a solid general base count.

Learning in Schools and Elsewhere

Some skills are most readily and efficiently acquired in schools, some in other settings, formal or informal. These kinds and contexts of learning are more often complementary than substitutive, but there is enough overlap to make what school should do or should not do a complex policy question.

It is learning to learn that must be the hallmark of successful schooling. Few can doubt the practical importance of greater command over verbal and mathematical skills in a wide range of occupations in a modern or modernizing economy. For many activities these capabilities are of direct and immediate importance, and are sought out by employers whatever the need may be for more specialized skills as well. But though pervasive in their importance at every level of skill development, verbal and mathematical skills are not the only kinds of learning that yield portable skills and foster efficiency in further learning. Obvious and widely recognized is the value of at least a modicum of science education as contributing to diverse future activities and behaviour in both households and labour markets – and not just among those for whom science education is seen as specialized pre-vocational training.

One can go further. Commercial curricula are a clear example of provision of highly portable skills in that they have multiple uses in diverse set-

tings, and they can serve in the development of a number of subsequent distinctive specializations to higher levels of skill. They are also less costly and more readily accommodated within a general secondary-school setting than are most 'vocational' studies. It is no accident that private full-scale secondary schools offer either academic or commercial curricula.

Most of the investigations by economists interested in vocational training have focused on either secondary schools and junior colleges or, occasionally, on training in the military. But there is also education and training for government agencies, commonly conducted in associated residential institutions; common examples are police colleges, training for railroad workers, and in some cases for other government-controlled enterprises. Such training programmes are diverse in the extent of the general education they provide. From the perspective of individual students they may be seen as substitutes for vocational secondary or junior college education. But they are distinctive in the direct linkage with subsequent employment, both as an ensured opportunity and a required commitment. Numbers trained are controlled in line with government demand, which is itself subject to control and more easily predicted than is the case for most manpower requirements projections. In governmental sectors initial training and subsequent recurrent education and skill upgrading can in principle be treated as part of the same human resource development and utilization system. Unfortunately, however, this does not guarantee either efficiency at any given time or dynamic progress over time.

The nature, scope and variety of vocational career training are affected as much by the institutional and human resources available for such purposes as by skill demands, although these are associated through past developments. It is in part the lack of other options in apprenticeships that explains some of the low-level trade schools a generation ago in many colonies and the 'invisible' African apprentices to Indian employers in Kenya (see King, 1975). Such interim transition phenomena were unquestionably cost-effective in the then existing circumstances. They were not and are not recognized parts of 'educational' or human development plans. More systematically planned, on the other hand, were the guild programmes with their formally graded certification, brought into the British colonies along with settlers from the metropolis. Also more visible have been three developments that deserve illustrative attention here.

First, it may be of particular interest to sketch briefly the way in which educational provisions in Japanese *Zaibatsu* reflected and responded to the expansion of upper secondary schools in the decades following World War II. Institutional innovation has been an outstanding feature of Japanese society since the Meiji Restoration, and the post-war institutionalization of the 'life commitment' system in large Japanese firms was a rational response

in a particular historical situation. These firms found it worthwhile to provide both specialized and more general types of education to new graduates from an 8-year and then a 9-year compulsory schooling. At first such training could lead to secondary-school equivalence certificates, but this did not last long, for two reasons. First, the government stepped in to require that more of the general components must be included if certificates were to be granted. Even more important, enrolments in the upper secondary schools were expanding rapidly, and despite the employee attachments associated with the 'life commitment' system it was no longer efficient to provide in the firm the general education pursued by increasing numbers in the schools. Not only did demand for higher levels of general capabilities extend beyond the bounds of even a large *Zaibatsu*; that demand was spreading across the labour markets in the midst of rapid investments of new vintages of physical capital. Combined with rising incomes, this process was generating rising individual and parental demands for an upper secondary-school education with strong 'general' components, with or without vocational specializations. The big business enterprises of Japan continued to pursue systematic programmes in the development of competencies among their employees, but restructured to complement the changed situation in the supplies of human resources on their doorsteps. Again, the responses of firms, of individuals, and of the makers of public policy were all pragmatic and decidedly rational.

German history has thrown up another way of developing vocational skills that should be suggestive at least in comparison and contrast with the National Training Service (SENA) and related programmes in Latin America. German young people leaving school at the age of 15 (it used to be 14) enter working apprenticeships in one or another trade, but they spend one or two (usually two) days a week in theoretical studies. This constitutes a true joining of the strengths of apprentice experience and classroom methods, integrating theory and practice. The Germans so trained become highly skilled workers with a foundation that supports further development of their skills with experience, and they are in demand not only in their homeland but in other countries as well. Notice, however, that this performance reflects in part the strong foundations in primary education.

SENA in Colombia, the National Services for Industrial and Commercial Training in Brazil (SENAI & SENAC), and related arrangements elsewhere in Latin America are all attempts to build vocational skills starting from close ties with work experience. These programmes are supported by taxes on employers with more than a specified number of employees. They vary in the extent to which (if at all) they seek sponsorship of individual trainees by a taxed firm, though without guarantees of subsequent employment of the trainee sponsored. The National Training Institute in Costa Rica (INA)

includes a three-year training programme along SENA lines, but provides also some very different programmes for quick acquisition of lower-level skills.

How the success or failure of these programmes is assessed depends both on the criteria by which they are judged and the quality of the training, not only in its specialized practical components but also in theoretical foundations. Although there has been no systematic benefit-cost assessment of three-year INA training in Costa Rica, local opinions seem to be a combination of great enthusiasm and clearly expressed concern about the weak theoretical foundations of the programme. Evaluations of SENAI and SENAC in Brazil have been mixed, but so, apparently, have the bases of these evaluations. One thing is clear enough, however: these programmes contributed, even if in a limited way, to reducing the social status polarization of educational attainments in Brazilian society.

The most thorough study of any of these programmes is apparently Puryear's 1974 dissertation on SENA in Colombia. There, as in related programmes elsewhere, entrants have had no secondary schooling, but only the more able among primary-school leavers were selected. Puryear attempted to adjust for this bias in assessing results, which remained favourable even in benefit-cost terms. If one insisted on taking as a criterion the most direct association between training and post-training activities, the favourable conclusion would have to be modified, however, since a sizeable minority of the young people in the Colombia programme went from it into a regular secondary school. The SENA experience for them became both a way to support themselves and save a little for further regular schooling and a skill that they combined with further formal education. Even without any extension of formal schooling, the Colombia graduates of SENA had benefited from a solid theoretical base in their training.

Proponents of vocational training in secondary school curricula have not been unaware of the relevance of work experience, and some of them have tried to incorporate such experience as part of the school programme. This is not at all the same thing, however, as bringing theoretical instruction into a national apprenticeship programme. The work time in school is at best artificial and rarely are qualified instructors available. At the worst, this becomes sheer exploitation of children in order to cover some small part of the costs of their training. Effects on their perceptions of 'work' and of standards of workmanship can be disastrous. Cases in which those effects are favourable tend to be the exception. The most frequent use of work within a vocational curriculum has been and continues to be in agricultural schools for rural pupils. With rare exceptions, the teachers have no enthusiasm for the agricultural components of the curriculum, and only a minority of the students are in agriculture-biased curricula by their own choice.

The exceptions are programmes built around well designed experimental plots and or that incorporate training in systematic accounting of the costs and returns of any profit-making enterprise (which should incorporate the implicit costs of the student labour). Such exceptions, which are rare, do in fact integrate general theoretical learning with practical applications.

A lesson of these school-work experiences at upper secondary levels comes back again to quality. This makes heavy demands on teaching staff, and options are limited outside agriculture by equipment requirements and the costs of attracting qualified instructors.

What Schools Do Worst, or Should Not Do At All

Four problems deserve attention here. (1) Some aspects of learning require direct involvement in production or at least participant observation, but it is extremely difficult and costly to create such an experience in a school setting. Done in a superficial way, such efforts can be dysfunctional in their long-run effects. (2) Second is the problem of high rates of skill obsolescence. In a well functioning educational and training system, provision of training likely soon to become obsolete will be made only for skills that are quickly acquired. A regular school system with its sequences of fixed duration and its bureaucratic lags is poorly situated either to identify the new demands or to provide the facilities for such training. Indeed, where rates of skill obsolescence are high so will be the obsolescence of instructors on the teaching staffs of schools, in contrast to trainers in producing enterprises. (3) Third, there is the problem of costliness and obsolescence of materials and equipment, which can make school training an inadequate or an excessively costly undertaking. (4) Finally, where skills are highly specialized to work in particular firms, learning is best done in those firms. There will normally be many reasons in such a situation for encouraging enterprise training rather than attempting such provision in the regular schools. This is what happens in training for employment in public agencies, exemplified in the aforementioned police colleges or railroad workshops (public or private). A whole set of policy questions pertaining to labour markets as well as to education proper is involved.

There are many things that could be and are done in classroom-like settings that may best be pursued outside the regular school system. They are better left to 'miscellaneous' short-course public institutions or proprietary schools. Even in many LDCs a glance through a metropolitan telephone directory will reveal a diversity of 'schools' offering such courses. Common subjects are typing and cosmetology, but proprietary offerings can be extremely diverse, and not always under a 'schools' heading (see Hyde, 1975).

The advantages of encouraging rather than inhibiting such developments can be immense, for such institutions give great flexibility and dynamic potential to educational provision viewed in broad terms. And they do so without burdening public budgets, which are under strain over most of the world.

The Skill Dynamics of Individual and Societal Development

Almost a century and a half ago evidence was taken from employers on 'the influence of training and education on the value of workmen and on the comparative eligibility of educated and uneducated workmen for employment.' The interviews were published in London in 1840 by Her Majesty's Stationery Office (the government printer). Especially interesting even today must be the observations by a Swiss engineer, who was one of the partners in an enterprise that employed workers from nine different European countries. He was asked the question 'What do you find to be the differences of acquirements imparted by specific training and education?' (The reference was of course to specialized training and general school education in the terminology used above.) He answered as follows:

As workmen *only*, the preference is undoubtedly due to the English; because as we find them they are all trained to special branches, on which they have had comparatively superior training and have concentrated all of their thoughts. As men of business or of general usefulness, and as men with whom an employer would best like to be surrounded, I should, however, decidedly prefer the Saxons and Swiss, but more especially the Saxons, because they have had a very careful general education, which has extended their capacities beyond any special employment and rendered them fit to take up, after a short preparation, any employment to which they may be called. If I have an English workman engaged in the erection of a steam engine, he will understand that and nothing else; . . . for other circumstances or other branches of mechanics, he will be comparatively helpless to adapt himself . . . (HMSO, 1840).

The mid-nineteenth century was a period of rapid economic change in Europe. We are living today in a period of rapid global change. The Schumpeterian Swiss engineer-entrepreneur of an earlier century had heard nothing of 'national manpower requirements forecasting', or of the formal refinements of cost-benefit and cost-effectiveness analysis, and he was unencumbered by any knowledge of steady-rate equilibrium theory. What he knew was three fundamental truths that are as applicable in 1988 as they are in 1840: the importance of quality, the importance of education for skill portability and efficiency in post-school learning, and the associated complementarity between schooling and the acquisition of skills in the work place.

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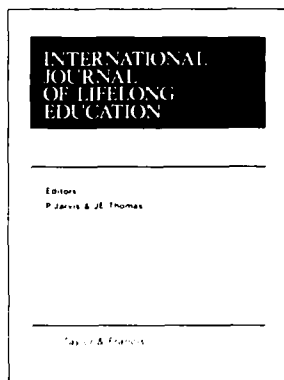
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EDITORS

P. Jarvis
Department of Education
University of Surrey, Guildford
Surrey GU2 5XH, UK

J.E. Thomas
Department of Adult Education
University of Nottingham
Nottingham NG1 4FJ, UK

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