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The Development of Manpower and Economic Development : Is Co-ordination Possible?

Peut-on coordonner le développement de la main-d'œuvre et la croissance économique?

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Résumé de l'article

On note depuis quelques années l'avènement d'un changement significatif tendant à la valorisation du développement de la main-d'œuvre afin de maintenir ou d'obtenir un taux de croissance économique satisfaisant. Ceci est la conséquence normale de l'apparition d'une certaine rareté de main-d'œuvre dans quelques secteurs de l'économie qui évoluent plus rapidement : tant que le capital était, d'une façon générale, quelque chose de rare et que la main-d'œuvre était relativement abondante, il était normal qu'on mette l'accent sur le capital. Maintenant que le genre de main-d'œuvre requis par l'économie se fait rare, il est normal qu'on insiste plus sur le travail. Son apparente abondance peut expliquer le peu de cas que l'on faisait des ressources humaines dans l'analyse économique et la conception de la main-d'œuvre comme une somme de facteurs individuels homogènes n'ayant qu'une fonction de supplément ou de complément au capital. C'est pourquoi, on mit alors l'accent sur les problèmes psycho-sociologiques plutôt qu'économiques posés par la main-d'œuvre. Cependant, des expériences récentes, conduites à la fois dans des économies développées et en voie de développement, nous ont amenés à constater que le manque de capital « est, et de loin, dépassé par une plus grande rareté des talents en ce qui concerne l'entreprise et l'organisation, et un manque d'hommes techniquement formés et spécialisés ».

Gardant à l'esprit la reconnaissance du rôle prédominant joué par la main-d'œuvre dans la croissance économique (E.F. Denison, Xenophon Solotas, W. Galenson, G. Pyatt, G.S. Becker, T.W. Schultz, le Conseil économique du Canada et bien d'autres) nous pouvons nous demander quoi faire pour obtenir et maintenir un équilibre entre la composition professionnelle de la main-d'œuvre et les besoins professionnels de l'économie? Nous pensons que, à cause des goulots d'étranglements et des rigidités de notre industrie, de notre système d'éducation et de formation professionnelle, il n'est pas possible de compter sur les forces du marché pour maintenir l'équilibre nécessaire : nous devons prendre des moyens précis. Mais de tels moyens ne sont pas toujours en accord avec les concepts sociaux établis. Il faut d'abord faire comprendre au public la nécessité absolue d'une coordination entre nos programmes d'éducation et de formation professionnelle d'une part et les besoins de notre économie, de nos institutions et de notre société d'autre part. On doit aussi apprendre aux gens que les bénéfices individuels découlant de notre éducation profitent à l'ensemble du public, justifiant ainsi l'accroissement des dépenses gouvernementales dans le domaine éducationnel.

Le Canada n'a jamais eu de politique globale de main-d'œuvre. De ce fait, il n'existe pas d'informations essentielles et cependant fort simples, telles que d'une part le nombre, la nature et la localisation des postes offerts et d'autre part, la quantité et la nature de main-d'œuvre disponible ou sur le point de l'être. Puisque ce sont les employeurs, les employés et les institutions d'enseignement et de formation professionnelle qui pourraient fournir ces renseignements, il serait nécessaire d'écarter tout obstacle réel ou imaginaire qui a jusqu'ici entravé une telle réalisation et de mettre au point une organisation qui permette de coordonner, de centraliser et de diffuser ces dits renseignements dans toute notre économie.

En l'absence de toute coordination de nos programmes d'éducation et de formation professionnelle d'une part et des objectifs sociaux, politiques et économiques d'autre part, et sans la centralisation des renseignements relatifs aux besoins en main-d'œuvre, il sera impossible d'établir et de maintenir l'équilibre entre l'offre et la demande de nos ressources humaines.

Enfin, ce qui aidera à déterminer la nature de la main-d'œuvre dont on aura besoin dans l'avenir, c'est la coordination des activités de tous ceux qui s'occupent de la préparation et de l'utilisation de la main-d'œuvre et de la décentralisation des renseignements au sujet des possibilités présentes et futures pour toutes les catégories de main-d'œuvre et d'emplois. En effet, l'organisation d'un marché efficace de main-d'œuvre n'est pas chose faite et de courte durée. Il faudrait donc adopter des projets spécifiques pour déterminer les relations actuelles entre les qualités de l'éducation et de la formation requises pour certains emplois et les qualités existantes chez les praticiens de ces dits emplois. La question qui se pose est la suivante : est-il possible d'établir pour chaque emploi une combinaison optimale d'éducation et de formation professionnelle? Si cela est impossible, quelle est alors la meilleure méthode qui assurera l'existence d'une main-d'œuvre possédant les qualifications nécessaires tant au point de vue du niveau scolaire que de la formation professionnelle et qui correspondent aux exigences changeantes de l'économie? Si l'on considère que la main-d'œuvre est le facteur primordial de la croissance économique, comme cela a d'ailleurs été prouvé, les dépenses que l'on fait pour elle — pour son éducation, sa formation professionnelle, sa réadaptation, sa mobilité et pour plus d'efficacité dans sa répartition et son utilisation — devraient être considérées comme un investissement du plus haut intérêt.

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The Development of Manpower and Economic Development : Is Co-ordination Possible ?

S.G. Peitchinis

Canada has grossly neglected the development of her human resources. In addition, she has failed to establish the very basic requisites for the efficient functioning of the labour market. Considering that both labour and the labour market have been attributed significant roles in the process of economic growth, what must we do to ensure the attainment and maintenance of a balance between the qualitative and quantitative occupational composition of the labour force and the manpower requirements of the economy?

Introduction

A survey of recent writings on the factors bearing on economic development, the reports of the Economic Council of Canada included, would reveal that more emphasis is being placed on the significance of education, training and the quality of manpower generally, than on savings, investment in capital goods, trade balances, taxation, the distribution of national income, and other traditional economic factors. Only a few years ago, plans for economic development contained very little on the way of an analysis of manpower problems. It was taken for granted that given adequate quantities of the other scarce factors required, and ensuring the pursuance of correct monetary, fiscal, trade, wage and price policies, the necessary manpower would be forthcoming.

The apparent shift of emphasis in favour of labour should be viewed as a natural consequence of changes in the degree of scarcity in the relevant factor of production; as long as capital was generally

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scarce, while labour could be found in relative abundance, it was natural that the emphasis should have been put on capital. In this context, it is equally understandable why now the emphasis should have shifted to labour. Production processes, and social and political institutions have changed so radically within a relatively short period of time, as to cause pronounced scarcities in specialized manpower. At the same time, our knowledge of monetary and fiscal economics has improved, and international co-operation has become so organized as to increase the availability of investment capital.¹

Therefore, the seeming neglect of human resources in economic analysis, and their treatment as factor units of equal quality with a supplementary or complementary function in relation to capital, can be attributed to their apparent abundance. When an economy can accommodate any kind of labour, and workers are generally available on the market, labour will not constitute an economic problem. This is why most writings pertaining to labour have been largely socio-psychological rather than economic. The current attention to human resources in relation to economic development is a recognition of the fact that the labour requirements of the economy have changed; that the economy can no longer absorb any kind of labour; and that the types of manpower resources required are generally scarce. As long as this scarcity persists, the supply and deployment of manpower will remain an economic problem of the first magnitude, and will maintain a position of priority in the theory of economic development.

In fact, some writers, amongst whom E. F. Denison is the more prominent, have utilized methods of analysis in which the traditional roles of capital and labour appear completely reversed: whereas traditionally improvements in the quality of labour were not given credit in explaining increases in productivity, now they do not give credit to improvements in the quality of capital. Their argument is that improvements in technology, which are responsible for increases in the quality of capital inputs, are the result of the more and better education of their creators. Therefore, whatever the increase in productivity consequent

(1) A specialist in Monetary Economics has put the problem thusly: «... the importance given until recently to capital shortage as the only obstacle to economic growth does not appear to provide a sound approach to the problem. Although a heavy shortage of capital is a serious disadvantage for underdeveloped countries, it is largely overshadowed by the even greater scarcity of entrepreneurial and organizational abilities and the lack of specially and technically trained human beings». XENOPHON ZOLOTAS, *Monetary Equilibrium and Economic Development* (1965), p. 162.

on improved capital inputs, the credit belong to the greater knowledge of those who create, operate, and maintain them, rather than to the capital inputs themselves. On this basis, Denison attributed roughly 23 per cent of the growth rate of the United States to increased education, 20 per cent to the advance of knowledge, and only 15 per cent to *increased capital input*.²

It warrants repetition, that Denison treats capital units in the same way as units of labour were treated in the past, i.e. allocation-units of unchanging quality. Hence, the contribution to growth attributable to capital inputs is only that proportion which can be related to the increase in the *quantity* of capital inputs. Increases in productivity attributable to improvements in the *quality* of capital inputs, along with those attributable to increases in employment, increased education, and the advance of knowledge, are in effect credited to labour. The argument being that *only labour can be a depository and transformer of knowledge into productive agents*.³

The Supply of Quality Manpower

In view of the recognized importance of the quality of labour in economic development, what are the processes by which manpower is being readied for its economic activities? Are the educational and training programmes based on information regarding anticipated manpower requirements, both in nature of skills and in quantity, or do they constitute a haphazard collection, largely the outcome of numerous revisions of past programmes?

Advanced industrial-commercial economies have evolved built-in systems of education and training — industrial, commercial and insti-

(2) E.F. DENISON, *The Sources of Economic Growth in the United States and the Alternatives Before Us*, (NBER, 1962) p. 269.

(3) The practice of treating labour as a factor of unchanging quality has been widely criticized: W. Galenson and G. Pyatt state: «...relatively little systematic work has been undertaken on the quality of the labour force as a factor in the promotion of growth»; and they find the cause in the «pre-occupation with the role of capital investment in the development process». See *The Quality of Labour and Economic Development in Certain Countries*, (ILO, 1964) p. 1; Daniel Lerner regards the traditional treatment of labour a serious weakness in economic analysis: «'human resources' are handled as allocation-units rather than transformation potentials». See «Changing Social Structure and Economic Development — Reflections on a Decade of International Experience», in *Social Aspects of Economic Development*, Economic and Social Studies Conference Board, (1964), p. 11; see also, Ingvar Svennilson, «Education, Research and Other Unidentified Factors in Growth» in *Problems of Economic Development*, E.A.G. Robinson (ed.).

tutional — from which there is a continuous flow of specialized and semi-specialized manpower. It is generally expected that under normal economic conditions the systems would automatically maintain an occupational diversification in the labour force consistent with the existing industrial-commercial structure of the economy.

However, the extent to which this will in fact be achieved, and whether the needs of the economy will be satisfied continually, will depend upon the flexibility of the systems, and hence, their responsiveness to the changing educational and training requirements of the labour force. A continuous balance between the quantities and qualities demanded by the economy at various prices, and the quantities and qualities produced by the systems, can only be maintained when the educational and training institutions and programmes remain continually in tune with the economic and institutional setting of the nation. On this proposition, nationwide imbalances between the demand for, and supply of, different types of labour can emerge in two ways: a) when educational and training institutions fail to respond adequately to changes in the educational and skill requirements of the economy; and b) when the resources allocated to educational and training institutions, both public and private, have not been adequate. Two important assumptions are made here: that the wage structure is flexible, and hence, it fully reflects the state of demand and supply; and that given adequate education and training facilities, and in the absence of direct financial burdens (indirect burdens, such as foregone earnings being disregarded), a larger proportion of people will take advantage of the educational and training opportunities.

There are numerous reasons why educational and training institutions may appear to be pursuing relatively rigid policies: firstly, there may be a lack of, or unsatisfactory liaison with employers, governments, and other sources of information regarding the nature, and quantity of skills that are, and will likely be, required in the immediate future; secondly, there is a well-known traditional rigidity in trade union rules regarding ratios of apprentices to journeymen, which prevent on-the-job-training programmes from responding to actual or anticipated changes in demand for certain skilled personnel; thirdly, many educational and training institutions are controlled or influenced by interest groups — religious organizations, professional associations, trade unions — whose educational policies and programmes are not necessarily motivated solely by the national interest; and finally, it is widely

recognized now that for a long time the educational policies pursued by many local and some provincial authorities reflected the educational philosophies of influential bureaucrats, and individual educationists, rather than by the changing requirements of the economic, social and institutional structure of the nation. The philosophy which dominated the educational system, and which continues to exert considerable influence, is the one which propagates the traditional concept of education-for-its-own-sake. By their very nature, educational policies which are formulated on the basis of this concept are less flexible than policies which reflect the economic, social and institutional requirements of the nation.

In the book *Manpower and Education*,⁴ authors Frederic Harbison and Charles A. Myers begin their introduction with the following statement: « In the final analysis, the wealth of a country is based upon people ». Statements of this nature have been expressed many times in the past, yet there has always been a distinct lack of national enthusiasm for the massive public expenditures required for the development of the innate abilities of the people; and there has usually existed a long lag in the introduction of public measures for the education and training of all those who have demonstrated the ability and desire to profit. The main problem appears to be a failure on the part of the public generally to understand the inter-relationship between private and public benefits derived from education. The very basic principle that in the matter of education and training the personal gains of individuals are also reflected in public gains, both socio-cultural and economic, has not been understood.⁵ As a result, there has perpetuated an educational system in which financial obstacles have been allowed to block the educational and training progress of thousands of individuals, and which is responsible, in part at least, for the failure to evolve a national educational policy and co-ordinate educational programmes with social, institutional and economic goals.

The reluctance of the general public to support any substantial increases in public spending on education has been rooted in the generally accepted concept that education is a consumer good. Since such

(4) McGraw-Hill Book Publishing Company, New York, 1965.

(5) Britain's Minister of Education, Mr. A. Crosland, told the annual meeting (1965) of the National Union of teachers that in the allocation of national revenue the public puts a relatively low priority on expenditures on education.

education is regarded as an end in itself, designed for the personal satisfaction of those who consume it, there has persisted a reasonable doubt regarding the extent to which the rapidly rising financial burdens should be assumed by the national treasury. Although there appears to be no resistance to providing a certain minimum amount of education for all, fully at public expense — the level of « minimum » being usually determined by the average level of schooling attended by the majority of the electorate — any amount beyond that level is regarded as personal privilege, to be met from personal rather than public income.

Economists are much to be blamed for the persistence of the consumer good concept of education: their neglect to emphasize the importance of the quality of labour in economic development helped to create the illusion that as long as capital was available the quality of labour, and hence, the education of the labour force did not matter. As a result, investment in capital goods was pursued relentlessly, whereas investment in the development of human potentialities was totally neglected.⁶ Albeit we find references by Adam Smith to the effect that a man's talent is part of his own, his family's, and society's wealth, there is little emphasis in his writings on the economic desirability of expanding educational facilities and increasing public expenditures in the development of human talent. Even Alfred Marshall, who appears to have recognized the nature and significance of investment in human capital, did not attempt any serious analysis of the subject. Only very recently has there been a major effort to develop a theory, and undertake some empirical research, in the areas of investment in human capital, and on the relationship between such investment and the rate of economic growth.⁷

The statement of Harbison and Myers, quoted above, does not mean, of course that other factors do not make important contributions to the

(6) « There has been a fairly widespread belief » declare W. Galenson and G. Pyatt, « that, given a sufficient volume of investment, a respectable tempo of economic growth was virtually assured. » *The Quality of Labour and Economic Development in Certain Countries*, p. 1.

(7) See : BECKER, G.S., *Human Capital — A Theoretical and Empirical Analysis with Special Reference to Education* (1964) ; SCHULTZ, T.W., *The Economic Value of Education* (1963) ; DENISON, E.F., *The Sources of Economic Growth of the United States and the Alternatives Before Us* (1964) ; BLAUG, MARK, « The Rate of Return on Investment in Education in Great Britain », *The Manchester School of Economic and Social Studies*, September 1965 ; MILLER, H.P., « Annual and Lifetime Income in Relation to Education 1939-1959 », *American Economic Review*, December 1960 ; BECKER, G.S., « Underinvestment in College Education », *American Economic Review Proceedings*, (May 1960).

growth of national wealth. Its substance is a postulate of fact: namely, that *human* ingenuity and effort are central in the process of economic development; and that specialized manpower at all levels of the occupational stratum is necessary for the discovery and exploitation of natural resources, to find capital, to design and construct capital instruments, to produce goods and services with comparative efficiency, to negotiate and conduct international trade in highly competitive markets, and so on. For example, in as much as we have tended to attribute the growth of Canada's wealth to her vast natural resources, in the absence of her specialized *human* resources, the natural ones would have remained largely in their original state, just as they have in certain countries which are equally rich in them but cannot exploit them.⁸

The Nature of Manpower Changes and Requirements

One of the most widely recognized aspects of Canada's economic development has been the very significant sectoral and industrial shift in employment that has taken place within the relatively short period of fifteen years, 1946-1961. No other country has experienced a shift of such magnitude within a comparably short span of time. In 1946 goods producing activities (agriculture, mining and other primary, construction, and manufacturing) employed an estimated 2,809,000 out of a total labour force of 4,666,000, representing 60.2 per cent; while service producing activities (education, health and welfare, government, financial and commercial) employed 1,857,000, representing 39.8 per cent of the labour force. By 1961, the number employed in goods producing activities fell to 2,771,000, representing 45.8 per cent of the labour force; whereas employment in service producing activities jumped by 77 per cent, to 3,278,000, representing 54.2 per cent of the total labour force; whereas employment in service producing activities jumped producing activities themselves: the number of workers engaged directly in the production process fell, while the number of those partaking in the process indirectly, i.e. administrative, clerical, managerial, and supervisory personnel, increased sharply.⁹

(8) Professor Zolotas, whom we quoted earlier, makes the following statement : « Our position on the problem of economic growth is that the development oriented dynamism of an economy depends far more on entrepreneurial and organizational ability and the specialized training of personnel, than on the size of material factors of production, (capital, natural wealth, etc.) », *Monetary Equilibrium and Economic Development*, p. 162.

(9) See : S.G. PETTCHINIS, *The Economics of Labour, Employment and Wages in Canada*, Chaps. 5-6.

In view of the fact that the educational and training qualifications required for each form of economic activity are in many instances quite different, shifts of this magnitude entail significant changes in manpower policy. Even if we assume that the nature of education and training required for goods producing activities and service activities remains substantially the same, the shift in employment itself from the one form of activity to the other would necessitate significant changes in the processes of preparing the labour force. The task becomes doubly difficult when account is taken of the fact that the shifts are accompanied with substantial changes in the nature of goods and services produced, and frequently by drastic changes in the methods of production.

However, it is well known that it is much easier to recognize the need for changes in educational and training policies, than to achieve the required consensus for the introduction of change. As a result, it is not unusual to encounter situations in which the market is allowed to play a dominant role in the occupational composition of the labour force, even though it may be obvious that it produces serious deficiencies, relative to the requirements of the economy. The fact is that our labour market is highly imperfect; and one of the ways in which its imperfections are demonstrated is through delayed responses of the occupational structure to the changing requirements of the economy. It follows, therefore, that if labour market rigidity is to be prevented from becoming or continuing to be an instrument of economic distortion, and an impediment to the optimum utilization of resources, ways must be found to expedite the introduction of desirable changes.

Canada has never had a national manpower policy in time of peace. Although there is some truth in the argument that constitutionally it is not possible to evolve *one* manpower policy — since education, training, and labour are matters of provincial jurisdiction — the fact remains that no serious effort has been put forth to dismantle or by-pass this obstacle. As a result, whatever manpower planning may have taken place has been on a Provincial basis. What is even more disturbing, however, is that areas in which national initiative was possible, Federal organizations have neither provided guidelines and basic criteria for manpower planning, nor have they attempted to establish the very basic, yet vital, elements for an efficient labour market. Hence, manpower policies have been based on nothing more than general occupational trends.

It is hardly necessary to emphasize that manpower policy cannot be based on trends alone. There must be available detailed information on current and anticipated demand for various occupations, both in terms of quantity and in the range of qualifications, throughout the economy, regionally, as well as industrially. As intimated earlier, however, such information cannot be obtained without some form of labour market centralization. Under the existing system of market organization no-one really knows how many and what kind of vacancies there are in Canada at any point of time; how they are distributed amongst industries, occupations, institutions, and locations; what kind and how much education and training is really necessary for the efficient performance of the tasks entailed in each employment position; and what changes have actually taken place in vacancies, quantitatively as well as in quality and location, from one point of time to another. Yet, this is the type of information without which it is impossible to formulate and pursue an effective manpower policy.¹⁰

The establishment of an efficient labour market is not really a difficult process: it merely requires the co-operation of employers, workers, educational and training institutions, and the government. The fact that such co-operation has not been established heretofore has been the result of lack of initiative, and the failure to present a plan for co-operation, rather than consequent opposition on the part of employers, as is frequently implied. Had the Network of National Employment Offices, for example, undertaken an intensive examination of the demand for, and supply of, manpower within individual jurisdictions; had they established close consultative contacts with educational and training institutions, so that their findings and policies could be co-ordinated;

(10) Serious doubts were expressed recently regarding our ability to determine the nature and magnitude of vacancies. At a conference on « The Measurement and Interpretation of Job Vacancies » sponsored by the National Bureau of Economic Research, only the French, Swedish and Belgian representatives made what may be described as optimistic pronouncements. Professor John Dunlop of Harvard reached the conclusion that for various reasons national vacancy data would not mean very much; and W. Thomson, of the National Employment Service of Canada, concluded that there were too many inadequacies in the existing system of data collection to make the results valuable as an indicator of demand for labour. He regards the data adequate only for the operations of the NES, and « for some general economic analysis by members of the service ». He emphasized that only members of the service can use the data, because only they are « knowledgeable about the methods of calculation and data collection ». See: W. THOMSON, « Collection and Use of Job Vacancy Data in Canada », in *The Measurement and Interpretation of Job Vacancies* (NBER, 1966) p. 189. Professor Dunlop's paper was entitled « Job Vacancy Measures and Economic Analysis ».

and had both of them sought the co-operation and confidence of management, there is no doubt that a better balance would have been maintained between the occupational demands of the changing economy and the occupational structure of the labour force.

Therefore, the introduction of an effective manpower policy will largely depend upon our ability to remove the obstacles, whether actual or illusory, which are responsible for the failure to introduce a successful scheme of co-operation and consultation between the parties involved in the organization and operation of the labour market. Our knowledge of the nature and quantity of demand and supply conditions will remain less than satisfactory, and we will continue to conduct our educational and training programmes on the basis of inadequate knowledge of what we have, what we will have in the foreseeable future, and what we should have, unless we find ways to centralize the relevant information, and to co-ordinate the processes of manpower production, distribution and utilization. Specialized manpower has become, and indications are that it will continue to be, an increasingly scarce resource; its costs will continue to rise; and its production will continue to become increasingly expensive. No nation which seeks to attain increasingly higher economic goals, can afford to treat haphazardly such a valuable economic resource.

The only source of relevant information on manpower are employers: data on occupations, ages, qualifications, wages and salaries, nature of work performed, are readily available to them. Hence, it should not be difficult for them to submit to a government agency, or to an independent Institute of Manpower Research, a record of the number of people they employ; their occupations; their educational and training qualifications — formal, on-the-job, type, length, etc.; the nature of functions they perform; their ages, sex and marital status; and thereafter submit on a quarterly or half-yearly basis information on manpower changes — vacancies that have occurred — nature of positions to be filled, qualifications sought of applicant, wages or salaries offered, and anticipated needs for various types of labour or planned reduction in manpower. The process would be simplified considerably if in the first instance we obtain and organize all the relevant information. I have said elsewhere that « In this age of computers, it should not be difficult to establish a National Labour Exchange system in which locations, industries, occupations, and the numerous characteristics of

jobs and workers are codified, so that employers and workers alike can dial the necessary code numbers to regional and national computers, and obtain speedy information on the availability and location of the types of workers required, and on job vacancies. »¹¹ Given such information, the task of determining the nature and magnitude of national needs becomes much easier, and the results much more accurate.

It has been suggested that the main pitfall of such a scheme is the reliance it places on the ability of firms to determine in advance future changes in productivity and technology in order to estimate the nature and quantity of their manpower needs. Also, changes in technology have been so rapid and so revolutionary as to make predictions regarding the nature of skills to be utilized in the distant future extremely hazardous. This makes the education and training of the labour force in *specific* skills a difficult task.

There is a general consensus, however, to the effect that the most effective form of training in an economy characterized by rapid and significant technological changes is broad training. Professor John Dunlop of Harvard is quoted to have declared: « . . . a more broadly trained man is more able to adapt to technological change when it takes place ». ¹² As to the nature of education, it is generally conceded that unless there are significant improvements in the quality of education, its contribution to growth will ultimately begin to decline. This suggests the need for measures to provide educational opportunities to a larger proportion of young people, and to improve the quality of education. According to E. F. Denison, education will become a declining source of growth in the United States beyond 1980, unless the quality of education is improved. He explains: « It seems impossible to continue to increase the quality of education — the amount of time individuals spend in school — at the rate we have in the past. We have almost doubled the number of days per year spent in school, and there just are not enough Saturdays, holidays and vacations left or enough absenteeism left, to double it again. Even with respect to school years we are limited; we cannot spend all our lives in school. So if we are to continue the same contribution of education to growth, we must work

(11) S. G. PETTICHINIS, *The Economics of Labour, Employment and Wages in Canada* (1965) p. 251.

(12) S.E. Harris and Levensohn (eds.) *Education and Public Policy*, p. 311.

for quality ». ¹³ Although we too may have reached the limit in terms of hours per day, days per week, months and years, the Canadian situation is somewhat different in one important respect: the proportion of individuals staying at school to the end of their secondary education, and those continuing on to college is considerably smaller than in the United States. Thus, while the limit to more education, in terms of « time spent in school », may have been reached, there remains the important objective of inducing more individuals to stay in school longer. This in itself would cause a postponement of the onset of diminishing returns from education. Concurrent improvements in quality would, of course, delay the occurrence of this even further.

It must be conceded, however, that we do not really know what specific educational and training qualifications would be required of the labour force in the years to come. Hence the propagation of principles designed to provide the individual with a body of knowledge which will enable him to adapt to changes in methods of production: more education rather than less; broad and general education and training rather than narrow and specific; education in depth rather than superficial. These are principles which find general support both amongst those who regard education as an end in itself, and those who regard it as a capacity-creating investment.

Education as a Capacity-Creating Investment

The concept of education as a capacity-creating investment, in addition to its qualities as a consumer service provided and consumed for-its-own-sake, is being increasingly recognized. ¹⁴ What reservations remain concern mainly difficulties in measuring the contribution of education rather than doubts regarding the contribution as such: the methods used in estimating variations in output attributable to variations

(13) *Ibid.*, pp. 332-333.

(14) In addition to the sources given above, see also: W. G. BOWEN, « Assessing the Economic Contribution of Education: An Appraisal of Alternative Approaches » in *Economic Aspects of Higher Education*, S.E. Harris (Ed.); W.G. BOWEN, *Economic Aspects of Education: Three Essays*, (1964); E.A.G. Robinson and John Vaisey, (Eds.) *The Economics of Education*, Proceedings of Conference held by the International Economic Association (1966); R.S. ECKAUS, « Economic Criteria for Education and Training », in *Review of Economics and Statistics*, May 1964, pp. 180-190; and C. Arnold Anderson and Mary J. Bordman (Eds.) *Education and Economic Development*, 1966.

in the quantity of education have been of an experimental nature, and the relationship between output and different types of education has not been sufficiently explored. Yet, as a capacity-creating investment, education cannot be taken in the aggregate: kinds of education and training, and the quantities and qualities of each kind are significant factors in development and growth.

Furthermore, it is not possible to formulate and carry-out a co-ordinated manpower and educational policy without knowing the nature and magnitude of manpower deficiencies, and hence *what kinds*, and *how much* of each kind of education and training is necessary. This cannot be done, of course, without full knowledge of the nature of jobs in existence throughout the economy, and the educational and training qualifications required for the most efficient performance of the tasks involved in each.¹⁵

Since this may appear a rather formidable task, perhaps it would be of value to make a brief reference to a relevant study conducted in the United States.¹⁶ Its purpose was to ascertain the « Special Vocational Preparation » (SVP) and « General Educational Development » (GED) required for an average performance of the tasks entailed in each of 4,000 jobs, and the changes in requirements that have taken place between 1940 and 1950. The SVP ranges from « short demonstrations only » to « over 10 years » training; and the GED from zero to 18 years of schooling. As might be expected, between 1940 and 1950 a considerable improvement became necessary in both the SVP and GED. Equally significant is the fact that the upward shift in GED required was somewhat more pronounced than that of the SVP.

(15) It has not been possible to find a specific relationship between occupations and educational qualifications, except for some of the more specialized professions. Manpower planners have set the problem as follows: although it is possible to make a rough estimate of the occupational combinations necessary for the attainment of a projected GDP, it is difficult to determine what educational content each occupation should have. See: H.S. PARNES, *Forecasting Educational Needs for Economic and Social Development*, (OECD, Paris, 1962), pp. 19-20, 39-44; H.S. PARNES, « Relation of Occupation to Educational Qualification », in *Education for Economic and Social Development*, (Paris, OECD, 1963), p. 148; and F. HARRISON and C.H. MYERS, *Education, Manpower and Economic Growth* (N.Y., 1964), pp. 205-206.

(16) U.S. Dept. of Labour, *Estimates of Worker Trait Requirements for 4,000 Jobs*, Washington, D.C.

Some of the findings were as follows: ¹⁷

GENERAL EDUCATIONAL DEVELOPMENT (GED)

<i>Grade School or Equivalent</i>	<i>Percentage Distribution of the Labour Force in the 4000 jobs</i>	
	<i>1940 Labour Force</i>	<i>1950 Labour Force</i>
0	1.30	0.22
4	7.76	5.67
7	19.57	16.48
10	42.93	44.69
12	21.40	25.49
16	5.16	5.05
18	1.88	2.40

Evidently, higher educational qualifications were required in 1950, for « an average performance » of the tasks entailed in the 4,000 jobs studied, than in 1940: a larger proportion of the labour force needed grade 10-12 education, and more were required to have post-graduate education. It is noteworthy that the need for people with only four years of university education, presumably a non-professional baccalaureate, remained virtually unchanged. These findings, which undoubtedly have become even more pronounced since 1950, lend support to the agitation for expansion in graduate studies. Another finding, which suggests some interesting implications, is the fact that 39 per cent of employed persons had full High School education in 1950 (as shown by the 1950 Census of Population) whereas only 32.4 per cent with that level of education were required. This lead R. S. Eckaus to conclude that « these numbers seem to show a growing amount of 'unemployed' high school education in the labour force ». ¹⁸

SPECIAL VOCATIONAL PREPARATION (SVP)

<i>Period of Training Required</i>	<i>Percentage Distribution of the Labour Force</i>	
	<i>1940 Force</i>	<i>1950 Force</i>
1. Short Demonstration Only	1.40	0.47
2. More than Short Demonstration — up to and including 30 days	16.70	20.95

(17) All information pertaining to the study is from an article by E.S. ECKAUS, « Economic Criteria for Education and Training », *Review of Economics and Statistics*, May 1964.

(18) *Ibid.*, p. 186.

3. Over 30 days and up to and including 3 months	13.23	7.71
4. Over 3 months and up to and including 6 months	22.90	23.71
5. Over 6 months and up to and including <i>one</i> year	4.33	5.06
6. Over <i>one</i> year and up to and including <i>two</i> years	17.54	14.37
7. Over <i>two</i> years and up to and including <i>four</i> years	20.53	23.52
8. Over <i>four</i> years	3.33	4.21
Average no. of Years of Training Required . .	1.26	1.35

Studies of this nature should become the foundation of a co-ordinated program of manpower and educational planning. There is no other way of determining the relationship between the tasks involved in the thousands of jobs existing in the economy, and the qualifications required of those undertaking to perform them. We have no evidence at the moment as to whether, and to what extent, people are more or less qualified for the tasks entailed in the positions they occupy. How then can we determine the quantity of each occupational classification that should be prepared, and the educational and training qualifications with which they must be equipped? It is suggested that we shall remain only half informed of the actual manpower needs of the economy, unless a massive project is undertaken to ascertain the existing relationship between the educational and training *attainments* of the labour force and the educational and training *requirements* of the jobs they perform. There should exist for each major industry a *Requirements-Attainments Matrix* showing a) the number of jobs they have, and the qualifications required of those who perform them; and b) the qualifications of those who do perform them. In this way we shall be able to determine the extent to which people are over-qualified or under-qualified for the jobs they perform, and thus gain a fuller knowledge of our immediate and prospective requirements of quality manpower. To illustrate:

REQUIREMENTS-ATTAINMENTS MATRIX ¹⁹

INDUSTRY A : EDUCATIONAL QUALIFICATIONS OF ALL EMPLOYEES

EDUCATIONAL REQUIREMENTS											TOTAL NO. REQUIRED AND EDUCATIONAL REQUIREMENTS SPECIFIED
YEARS OF SCHOOLING	0-5	6-8	9-11	12-13	14-15	POST- SEC. DIPL.	TECH. CERT.	UNIV. DEGR.	PROF. DEGR.	TOTAL	
EDUCATIONAL ATTAINMENTS	0-5										
	6-8										
	9-11										
	12-13										
	14-15										
	POST- SEC. DIPL.										
	TECH. CERT.										
	UNIV. DEGR.										
	PROF. DEGR.										
	TOTAL										

The foregoing is based on the assumption that there are specific levels of education and training for each job, and that, by implication, variations in them would result in variations of output. To what extent is this assumption operative? Is it possible to establish optimum combinations of education and training for each job? As indicated earlier, sceptics and critics alike insist that only rarely would one find situations in which a given output can only be produced efficiently by a labour force of *specific* educational content, although they are less critical of the proposition pertaining to combinations of specifically trained personnel. They take the stand that while it may be possible to establish optimum combinations of trained workers (skilled and semi-skilled) for each job, it is very doubtful whether optimum combinations of educational content can be determined. A variety of educational combinations can be used without any deterioration in efficiency.

Another criticism concerns the seeming isolation of educational and training qualifications from other factors involved in the process of

(19) A matrix of this nature is being used in a study of the « Utilization of Qualified Manpower in British Industry » conducted by the Unit for Economic and Statistical Studies on Higher Education, at the London School of Economics.

production. It does not seem realistic to consider the occupational composition and educational content of various combinations of manpower, without examining the relation of each combination to each of alternative manpower-capital combinations, and without taking into account the relative costs of the various combinations. Account must be taken of various technical possibilities that can be deployed in the production of the given output; the various combinations of manpower and technology that can be utilized; and of the relative prices of the various types of capital and labour.

It must be admitted that these are valid criticisms. Also, the assumption of a unique relationship between output and the occupational composition and educational content of the labour force, and the failure to take specific account of changes in technology and factor prices are serious weaknesses. But considering that the alternative is the system of education and training in operation heretofore, and the absence of co-ordination between it and processes of production, the manpower planning approach suggested here, even in the relatively limited form, may prove to be the best way of ensuring that the standard of education and training acquired by the labour force is related to the actual and anticipated needs of the economy.

Nevertheless, assuming that the information required for the detailed manpower program entailed in the proposed *Requirements-Attainments Matrix* system cannot be obtained, what is the best alternative for the attainment of a more satisfactory balance between the quality of manpower and the economic system? It has been suggested that the most effective alternative would be to raise the general level of education of the whole population, and at the same time concentrate on qualitative and quantitative improvements in a number of key occupational categories: « Improvements and extension of the educational standards of the population, with special emphasis on technical and organizational training appears to be the only way to overcome the obstacles to an accelerated rate of growth. »²⁰ More specifically, the U.S. Department of Labor has classified four occupational groups as « Key » categories, referring to them as « the prime movers of change, the directors and shapers of development itself. »²¹ They are: the professional 'idea man'; managers and administrators; highly trained scientific and tech-

(20) XENOPHON ZOLOTAS, *Monetary Equilibrium and Economic Development*, p. 25.

(21) U.S. Department of Labor, Bureau of Employment Security, *Manpower Programs and Planning in Economic Development* (1963) p. 7.

nical personnel; and trainers of others. This is a legitimate alternative, but it is by no means free of difficulties. These occupational groups require long periods of training and education, which makes the projection of the rate and nature of economic development no less necessary, and the determination of quality manpower requirements throughout the economy no less important, than for the more inclusive approach suggested earlier.

The recognition of the growth potential of education and training lends support to the proposition that expenditures on educational and training institutions and programmes represent capacity-creating investment. This has important implications for public spending on education. As long as education was considered to be a consumer service only, i.e. a service to be had for its own sake, expenditures on it were regarded as current consumer expenditures. Hence, financing was largely from current tax revenue and fees. Only the funds allocated to building and equipment were designated as « capital » spending, and only such funds could legitimately be obtained through borrowing. This is quite consistent with the then existing concept of the role of education in society.

The separation of expenditures between capital and non-capital is generally determined by whether the expenditure will or will not produce an economic return. Where a return is anticipated, the expenditure will pay for itself in the long run; in which case, it would be justifiable to borrow the necessary funds. Where the expenditure is on current consumption, however, and there is no actual return (although some return can be imputed in the form of efficiency related to good health and contentment), borrowing will be a burden which would have to be met in future with revenues from other sources. Therefore, the proposition that, in addition to being a consumer service, education is an investment good as well, lends support to the contention that borrowing for « non-capital » expenditures on education is fully justifiable.

There is considerable evidence now of a close relationship between education and income.²² This suggests that expenditures on education as such — other than on buildings, machinery and equipment — do in fact produce an economic return. Therefore, if we accept the proposition that the distinction between capital and non-capital expenditures is determined by whether or not there is an economic return, then expenditures on education are capital expenditures. Further, if we

(22) Particularly the studies of H.P. Miller, T.W. Schultz and G.S. Becker.

accept the proposition that there is merit in the borrowing of capital funds, then borrowing and spending on education should be regarded as an investment of the highest quality.²³

Manpower Plannings

The foregoing comments suggest the need for manpower planning. Our experience over the recent past has demonstrated that the existing system of manpower preparation — on the whole a haphazard system of education and training, supplemented by a certain degree of selective immigration — can no longer cope with the rapidly changing manpower requirements of the nation. With due respect to the education-for-its-own-sake dogmatists, it should be stated that the educational establishment is becoming too expensive, and manpower with specialized education and training too scarce, to allow the system to function in relative economic and social isolation. A closer relationship must be established between the educational and training programmes of manpower producing institutions and emerging manpower needs.

Although the concept of manpower planning is widely accepted today, there is little evidence of a determined movement in that direction. The discussion on the subject, which has been rather extensive, has dealt largely with the question of the nature of education and training that will be necessary for effective employment ten or twenty years hence, rather than with more pressing and less speculative problems, such as, *the form of market organization which will facilitate the most efficient preparation and utilization of manpower*. Under the existing market organization we are comparatively ignorant of information which should constitute the basis for manpower projections and planning: the nature and quality of the nation's *active* manpower; the nature and quality of *potential* part-time or full-time manpower (mainly housewives, but also, unemployed, underemployed and compulsorily retired male and female workers); the nature and amount of additional education and training necessary to raise the level of employability of the potential labour force; factors bearing on the failure of potential workers to become active; the nature and quality of manpower that the

(23) M. Blaug has estimated that the return on the cost incurred to complete the three years of secondary education in Great Britain in 1963 was 13%, and the rate of return on the costs incurred to complete three years of higher education was 14%. « These yields are about 50% higher than those that can be earned by investing in equities and debentures ». See « The Rate of Return on Investment in Education in Great Britain », *The Manchester School of Economic and Social Studies*, September 1965, p. 209.

economy requires; what shortages and excesses there are, and where; the quantity and nature of manpower produced by the existing educational and training institutions — not just how many drop out and the number that finish secondary schools, technical institutes and universities, but also, what employment qualifications they have, what proportion continue their education and training to acquire such qualifications, what relationship is there between their educational and training qualifications and the nature of employment they desire, and so on.

Manpower planning is not a mere projection of what can or will happen to labour generally in the course of economic development; nor is it a mere projection of the changing occupational composition of the labour force in the course of a projected rate and pattern of economic growth. It is all this plus what has to be done in order to achieve and maintain the required manpower mix in all major areas and forms of activity throughout the economy.

The determination of *what* is to be done to achieve and maintain a satisfactory balance between the occupational composition of the labour force and the occupational requirements of the economy, and *how* it is to be done, are the central problems of a manpower plan; whereas the projection of the manpower mix that will be required is little more than a statistical or econometric computation. Admittedly, the task of determining accurately the nature and quantity of various skills that will be required by the economy ten years hence is a very difficult one; and much effort can be wasted in producing the projected mix if the projections are too much off the mark. But it is nevertheless a procedure only, involving the application of statistical techniques and specialized knowledge regarding the extent to which the processes of economic activity will change over the projected period.

An examination of most manpower measures undertaken over the past decade, and the nature of most contemplated measures as well, convey the impression of an illusion that manpower planning begins with the determination of what kinds of labour will be required in the near future and ends with the provision of the necessary educational and training facilities. Much more than this is involved of course: to ensure the preparation of the required quantities in each specialization, there must be a system of selection and allocation of students to various educational and training programmes; to ensure that these future specialists make themselves available wherever there is demand for their ser-

vices, there must exist a comprehensive system of information, employer-worker communication, and mobility assistance; to ensure that skills remain continuously up-to-date, there should exist a network of education and training courses in all establishments employing more than, say, 50 workers; and finally, to ensure that educational and training institutions maintain desirable standards of quality, and respond readily to anticipated changes in demand for different specialties, there should exist a system of consultation with knowledgeable interpreters of the market, and a programme of operational and capital incentives. If the manpower plan does not provide for a labour market organization which contains all of these features, the statistical determination of how much and what kinds of labour is available, what will be available under the existing system of education and training, and what should be available to satisfy the economy's projected needs, will remain largely a convenient source of information.

For the most part, Canada's manpower legislation exhibits the relative absence of manpower development policy, and a failure to appreciate the complementary roles of social and welfare programmes and of a well organized labour market. The programmes initiated under The Technical and Vocational Training Assistance Act of 1960 were largely motivated by the then prevailing abnormally high rates of unemployment, and hence, there is the distinct manifestation of the same sense of temporariness in their provisions as is associated with unemployment itself, i.e. raise the demand for goods and services, train the unskilled, and re-train those whose skills are no longer in demand, and the problem is successfully resolved. I have said elsewhere,⁹ « As if the effect of structural and technological changes on the labour force is a temporary one, the legislation is designed to dispose of it the way an aspirin relieves a minor headache ». As long as the labour market lacks the very basic characteristics of good organization — an efficient vacancy clearing system, and a scheme facilitating labour mobility — and as long as there remain significant differences in social and welfare conditions amongst cities and regions, particularly in housing, it would be very difficult to achieve and maintain a balance between the occupational composition of the labour force and the requirements of the economy, and it would be impossible to maintain the desired distribution of labour throughout the economy.

(9) *The Economics of Labour, Employment and Wages in Canada*, p. 265.

It is suggested, therefore, that the time is long overdue for the establishment of a National Manpower Council with authority to formulate, and whenever necessary administer, a national manpower policy. To overcome the constitutional problem that this presents, and to make the Council an effective manpower authority, it would be necessary to make its composition a Federal-Provincial one, and to obtain an enacted undertaking by the Federal and Provincial Governments to implement its policies. Given such an arrangement, the success with which the Council will formulate and execute an effective manpower policy will depend upon its ability to obtain the co-operation of employers and workers, and to establish a close working relationship with educational and training institutions. It is not possible to create an efficiently functioning labour market unless the council has complete information on the number and kinds of workers employed by each major establishment in the country, their actual and anticipated vacancies, the number and kinds of workers looking for employment, and the number and kinds that will emerge from educational and training institutions in a year or two. Such information would enable the Council to determine how many workers require retraining, how many and who should be assisted, and if necessary induced, to move, and what deficiencies exist in educational and training programmes.

The efficient performance of the functions involved in each labour market activity depends, of course, upon its organization. The process of looking for work or for workers, and of hiring and releasing workers or finding and changing employment is too haphazard at present. There should exist a *Nationwide System of Labour Exchange Registration and Vacancy Clearing*. Secondly, the existing relationship between educational and training programmes and the requirements of the economy is also rather haphazard: it is vital that there be *close and continuous co-operation and consultation between those engaged in the preparation of human skills and those who employ them*. Thirdly, in view of the rapid changes in technology and production processes, there should exist a *flexible system of regular and compressed training courses*, to be organized and administered jointly by vocational institutions and major employing establishments. There is evidence that the practice in effect heretofore, whereby the range and nature of courses has been dictated largely by Ministry bureaucrats, is a source of irritation to both the administrators of vocational schools and employers. Finally, it is vital that there be a *comprehensive scheme for labour mobility*, involving various forms of financial incentives as well as assistance with transportation, housing and other obstacles to mobility.

Although each one of these schemes is important in itself, the success of a national manpower programme depends upon the ability of a central authority, such as the proposed National Manpower Council, to co-ordinate them in such a way as to create in effect one all-inclusive scheme. Mobility without re-training and without a vacancy clearing system can easily result in a mere re-allocation of unemployment. Education and training in specific skills without a comprehensive knowledge of existing and anticipated vacancies, and of their occupational, geographic and industrial distribution as well, can result in serious occupational maldistribution. A programme of education, training, retraining and mobility assistance will not be fully successful without complete information on qualifications required for various positions, conditions of employment offered, i.e. wages, hours, social security benefits, opportunities for advancement, and so on, locations, and other relevant information, which can be provided by a Labour Exchange Registration system.

PEUT-ON COORDONNER LE DÉVELOPPEMENT DE LA MAIN-D'OEUVRE ET LA CROISSANCE ÉCONOMIQUE ?

On note depuis quelques années l'avènement d'un changement significatif tendant à la valorisation du développement de la main-d'œuvre afin de maintenir ou d'obtenir un taux de croissance économique satisfaisant. Ceci est la conséquence normale de l'apparition d'une certaine rareté de main-d'œuvre dans quelques secteurs de l'économie qui évoluent plus rapidement : tant que le capital était, d'une façon générale, quelque chose de rare et que la main-d'œuvre était relativement abondante, il était normal qu'on mette l'accent sur le capital. Maintenant que le genre de main-d'œuvre requis par l'économie se fait rare, il est normal qu'on insiste plus sur le travail. Son apparente abondance peut expliquer le peu de cas que l'on faisait des ressources humaines dans l'analyse économique et la conception de la main-d'œuvre comme une somme de facteurs individuels homogènes n'ayant qu'une fonction de supplément ou de complément au capital. C'est pourquoi, on mit alors l'accent sur les problèmes psycho-sociologiques plutôt qu'économiques posés par la main-d'œuvre. Cependant, des expériences récentes, conduites à la fois dans des économies développées et en voie de développement, nous ont amenés à constater que le manque de capital « est, et de loin, dépassé par une plus grande rareté des talents en ce qui concerne l'entreprise et l'organisation, et un manque d'hommes techniquement formés et spécialisés ».

Gardant à l'esprit la reconnaissance du rôle prédominant joué par la main-d'œuvre dans la croissance économique (E.F. Denison, Xenophon Solotas, W. Galenson, G. Pyatt, G.S. Becker, T.W. Schultz, le Conseil économique du Canada et bien d'autres) nous pouvons nous demander quoi faire pour obtenir et maintenir un équilibre entre la composition professionnelle de la main-d'œuvre et les besoins professionnels de l'économie ? Nous pensons que, à cause des goulots

d'étranglements et des rigidités de notre industrie, de notre système d'éducation et de formation professionnelle, il n'est pas possible de compter sur les forces du marché pour maintenir l'équilibre nécessaire : nous devons prendre des moyens précis. Mais de tels moyens ne sont pas toujours en accord avec les concepts sociaux établis. Il faut d'abord faire comprendre au public la nécessité absolue d'une coordination entre nos programmes d'éducation et de formation professionnelle d'une part et les besoins de notre économie, de nos institutions et de notre société d'autre part. On doit aussi apprendre aux gens que les bénéfices individuels découlant de notre éducation profitent à l'ensemble du public, justifiant ainsi l'accroissement des dépenses gouvernementales dans le domaine éducationnel.

Le Canada n'a jamais eu de politique globale de main-d'oeuvre. De ce fait, il n'existe pas d'informations essentielles et cependant fort simples, telles que d'une part le nombre, la nature et la localisation des postes offerts et d'autre part, la quantité et la nature de main-d'oeuvre disponible ou sur le point de l'être. Puisque ce sont les employeurs, les employés et les institutions d'enseignement et de formation professionnelle qui pourraient fournir ces renseignements, il serait nécessaire d'écarter tout obstacle réel ou imaginaire qui a jusqu'ici entravé une telle réalisation et de mettre au point une organisation qui permette de coordonner, de centraliser et de diffuser ces dits renseignements dans toute notre économie.

En l'absence de toute coordination de nos programmes d'éducation et de formation professionnelle d'une part et des objectifs sociaux, politiques et économiques d'autre part, et sans la centralisation des renseignements relatifs aux besoins en main-d'oeuvre, il sera impossible d'établir et de maintenir l'équilibre entre l'offre et la demande de nos ressources humaines.

Enfin, ce qui aidera à déterminer la nature de la main-d'oeuvre dont on aura besoin dans l'avenir, c'est la coordination des activités de tous ceux qui s'occupent de la préparation et de l'utilisation de la main-d'oeuvre et de la décentralisation des renseignements au sujet des possibilités présentes et futures pour toutes les catégories de main-d'oeuvre et d'emplois. En effet, l'organisation d'un marché efficace de main-d'oeuvre n'est pas chose faite et de courte durée. Il faudrait donc adopter des projets spécifiques pour déterminer les relations actuelles entre les qualités de l'éducation et de la formation requises pour certains emplois et les qualités existantes chez les praticiens de ces dits emplois. La question qui se pose est la suivante : est-il possible d'établir pour chaque emploi une combinaison optimale d'éducation et de formation professionnelle ? Si cela est impossible, quelle est alors la meilleure méthode qui assurera l'existence d'une main-d'oeuvre possédant les qualifications nécessaires tant au point de vue du niveau scolaire que de la formation professionnelle et qui correspondent aux exigences changeantes de l'économie ? Si l'on considère que la main-d'oeuvre est le facteur primordial de la croissance économique, comme cela a d'ailleurs été prouvé, les dépenses que l'on fait pour elle — pour son éducation, sa formation professionnelle, sa réadaptation, sa mobilité et pour plus d'efficacité dans sa répartition et son utilisation — devraient être considérées comme un investissement du plus haut intérêt.