

COMMENTARY

Education, 'Skills' and Technological Change: the Politics of the 'New Economy'

Liz Gordon* and Ivan Snook#

Abstract

This paper examines the prevalent view that technological change is having widespread effects on the pattern and nature of employment in Aotearoa, and that these have significant implications for education. We analyse papers by Callister (1990) on the labour market and MacPherson (1990) on education; two documents which have been influential in shaping policy directions. We then criticize the central points made in these, and other, documents, and consider the implications for education. Finally, we point out that arguments for a new relationship between education and the labour market are political, incorporating a fundamental debate about the nature of our society both now and in the future.

Over the past few years, policies of education and training in the secondary and tertiary sectors have been heavily influenced by the view that the introduction of new technologies has altered the nature of the labour market. Hence, workers in the future will need higher skills (Haines and Callister 1989), more access to ongoing education and training (Catherwood 1985) and a more flexible and adaptable approach to work (Callister 1990). This view has been almost universally adopted by those involved in policy in Aotearoa. Independent policy advisors, such as the New Zealand Planning Council and various people commissioned to write reports for the Government (e.g. Hawke, 1988) have also argued for new approaches to education and training.

The Ministry of Education (and its predecessor, the Department) and the Department of Labour are two state agencies which vociferously promote this view. Pole (1989) argues that New Zealand's low participation rate in post-compulsory education and training, particularly amongst young people aged 17 and 18, seriously jeopardises skills development in the workforce. A working group on employment policy (Department of Labour 1988) argued that "the key task for employment policy at present is to promote adjustment within the labour market to the change in the economy" (p. 18), especially by increased participation in the post-compulsory sector. More recently, Elizabeth MacPherson (1990) argued this

* University of Canterbury

Massey University

position at a conference on Human Resources Development in Singapore. On behalf of the Ministry of Education she presented a paper entitled *Education in New Zealand: a response to the new environment*.

Beyond the immediate policy community, the Employers' Federation, the Manufacturers' Federation, the New Zealand Business Roundtable and the NZCTU are amongst the diverse groups on record as supporting the claims about labour market and technological change, and their implications for education.

In view of this unusual amount of consensus over a policy direction (which has international and well as national support), it is not surprising that both Labour and National Governments have supported the need for skills development, stressing further education and training, skill acquisition amongst the low-skilled and unemployed, and more years of schooling for young people. The education policy document released with the 1991 budget, *Investing in People: Our Greatest Asset* (Smith, 1991), for example, states that:

The New Zealand education system is renowned for significant educational developments, but it has so far failed to produce sufficient people with the advanced levels of skills and knowledge demanded by the highly competitive, high-technology market place in which New Zealand must prosper (p. 3).

The purpose of this paper is to examine the arguments behind the view that Aotearoa is undergoing a fundamental change in the structure of the labour market and work practices, which has specific and major implications for education and training. Despite the weight of opinion cited above, we wish to argue that there is little evidence to support the view that technological change is having, or will have, the dramatic effects claimed for it.

In the first section of this paper we will examine in more detail the claims that underpin this position. We will use two documents. The first is Macpherson's paper, written for the Ministry of Education, which examines the educational implications, and the second, *Tomorrow's Skills* (Haines and Callister 1989, revised by Callister 1990) which focuses more centrally on labour market issues. The second section uses information on education, unemployment and the labour market to examine the evidence available on the current effects of technological change. It will be argued that the changes for which evidence is available are due more to specific social, economic and political factors than to long term structural change arising from new technologies.

Despite a lack of evidence of structural changes in the workforce, it is clear that the acceptance of this viewpoint by such a wide range of powerful groups has significant political effects, particularly on the education system. When school budgets are falling, and senior classes are overflowing with reluctant returners unable to find work in a declining economy, pressure is being placed on teachers to mould the new flexible, adaptable and technologically literate worker envisaged by the policy makers. Schools are always vulnerable to the charge that they are not responding adequately to social or economic change, and particularly so when the whole welfare state, including the education system, is under attack (Treasury 1987, 1990; Sexton 1990). We conclude, then, with an analysis of the contradictions facing schools as a result of the tensions between the claims of a new technological economy and the reality of low-skilled jobs for many.

Education, labour market and technological change: two views

The Ministry position

In 1988, the Hawke Report argued that the new "Ministry of Education and Training will have to build better relations with noneducationalists than has been possible for the Department of Education" (p. 60). In response to this challenge, which stemmed from criticisms about a lack of labour market focus in education, the new Ministry set up a Unit on labour market analysis. The purpose of this Unit is to identify ways in which education, at all levels, can better serve the needs of the labour market.

MacPherson's (1990) paper summarises the kind of approach taken by the Labour Market Unit. The arguments discussed below have been used as input to the Education Goals Project and the National Curriculum Objectives Project of the Ministry. In other words, these arguments are being used to formulate educational policies at the present time. It contains an analysis of economic and labour market trends, and draws certain conclusions about the role and direction of education.

In relation to the labour market, two major claims are made. The first is that the service sector of the labour market is "continuing to command an increasing share of employment" (1990 p. 7). The evidence for this comes from Haines' (1989) analysis of employment trends, and in particular the claim that "the service sector's share of employment grew from 66.6% to almost 71%. Forecasts indicate this trend will continue with 85% of new jobs being generated by this sector between 1992-1997" (MacPherson 1990 p. 7). MacPherson notes that "the majority of these jobs will be non-manual and require a higher level of cognitive skills".

The second claim is that there is a "trend towards higher skill requirements in the majority of jobs" (*ibid*), not just in the service sector but also in the primary and manufacturing sectors. Thus a higher level of cognitive skill is needed not just for the burgeoning service sector, but also in manufacturing and primary sectors.

Underpinning MacPherson's analysis of labour market trends is the issue of changes in production and communication technologies and their implications for the structure and practices of the labour market. First, the trend towards growth in the service sector is seen to be the inevitable outcome of the new technologies, and one that will increase. Second, labour market practices will alter significantly. In other words, workers will be distributed differently across the labour market and will be doing work very different from that practised in the past.

One important effect which she identifies is that this re-organisation of work does not just apply to individual jobs, but also to the structure of organisations. Changes in the structure of specific jobs accompany, and are predicated upon, major changes in the system of production: "Increased worker participation plays a major part in the achievement of both productivity increases and on-the-job innovation. Workers are in general organised into teams or semi-autonomous work-groups responsible for producing sub-assemblies" (*ibid* p. 12).

In the approach followed by MacPherson, the existing organisation of production is named 'Fordist', and characterised by the involvement of workers in only part of the production process. The result is hierarchical workplaces, repetitive work and little control on the 'shop floor'. In contrast, the 'post-Fordist' organisation of work is seen as non-hierarchical, with workers in control of the whole production process and labour skills

integrated with 'cognitive' skills.

MacPherson (1990 pp 13-14) claims that in the workforce of the future there will be fewer jobs available for low skilled and inexperienced workers; an increase in the demand for skilled and adaptable workers; an increase in part-time and casual labour; a decline in 'career' opportunities; an increase in the participation of older women; a need for constant retraining. She also notes that "in the immediate future the numbers of long-term unemployed will continue to grow, fanned by the higher skill requirements of the new work environment".

Not surprisingly, this shift is seen as having major implications for education and training in Aotearoa: "the personal qualities and social and cognitive skills required by new technologies bring the domains of education and work closer together" (ibid p. 15). This has implications for secondary and tertiary education. Students should be exposed to more cooperative and team work in schools. Assessment should be achievement-based, stressing cognitive skills and understanding of the subject matter rather than mere repetition of taught material. Technology should be integrated into the core curriculum. There should be increased options at the senior school level "to cater for the differing destinations of students" (ibid p. 16). Increased participation in the senior school and in tertiary institutions is necessary to develop the new cognitive skills needed for the new workforce (these points are a summary of MacPherson's arguments, 1990 pp 15-17).

The Planning Council position

The Planning Council position has been clearly spelled out in Haines and Callister (1989), and its revised edition (Callister 1990) which was apparently written in order to close the most obvious gaps in the original document, and to add a long section on the educational implications of the findings.

Tomorrow's Skills (1990) plays upon the title of the government policy document, *Tomorrow's Schools* (1988). In the introduction to the Planning Council document, Hugh Fletcher writes: "*Tomorrow's Schools* has a vital role to play in ensuring that the new entrants into the workforce bring with them a high level of skills ... *Tomorrow's Skills*... shows the need to upgrade skills across the whole economy".

The document begins with a bow to the 'new economy', to which schools should relate by producing people with "the most appropriate skills" (p.1). While conceding that "predicting the future is becoming increasingly difficult", the writer goes on to suggest that by 2088, 65 percent of the volume of our international trade will be gained from 'services' (tourism, education, health, transport, finance etc). This will require a "highly skilled, highly creative, motivated and adaptable workforce" (p.3). And this will, of course, require more interaction between business and education.

The document goes on to suggest that there is occurring a shift from manual jobs to non-manual jobs, a distinction which it agrees is "one of degree rather than one of kind". 'Infograms' are then presented to show that between 1976 and 1986, the proportion of non-manual workers increased in all sectors. Overall, manual decreased and non-manual increased by 10%. This trend is projected into the future, the projection being based on "Planning Council economic forecasts plus an element of guessing" (p. 10). By 1997, it is estimated, two thirds of jobs will be non manual.

The analysis is then related to education. This section begins with a significant admission:

The move to non manual and service sector work is relatively easy to document. Less easy, but of more direct relevance to *Tomorrow's Schools*, is the increasing skill requirements of the new economy. (p. 11.)

Nevertheless, they try by indicating that the fastest growing jobs are those which "either require, or substantially benefit from, higher levels of education" (p. 11). Unfortunately, however, New Zealand falls behind other nations "in the provision of a solid base of skills for the majority of the workforce" (p. 16). This is 'proved' not by an analysis of our skills or theirs but by an 'infogram' on participation rates in various countries at ages 16-24. New Zealand is low by international standards.

The conclusion is obvious: "Our current workforce is ill-equipped for the challenges of the new economy." (p. 17.)

Analysis of the labour market/education nexus

Central to both the documents is the Planning Council project of analysis of the labour market and work trends. Two documents have been important in shaping the kinds of arguments outlined above. The first is *Prospects: Economic and Sectoral Trends to 1997* (National Sectoral Programme, 1988), which has provided the basis for the belief in an increasing trend towards employment in the service sector. The second is *Work Today* (Haines, 1989), a broad ranging review of the labour market, underpinned by arguments of technological change and new structures within the workforce. The arguments in both documents are based on the employment forecasts developed by the *Prospects* authors. They also rely heavily on a certain definition of the service sector, and of 'skills', in order to reach their conclusions. Before examining the educational implications drawn by both MacPherson and Callister, we need to look more closely at the basic assumptions made in the works on which they are based.

Underpinning all the arguments in these documents is the issue of structural change in the composition of the workforce, away from production and towards services. In both Callister (1990) and MacPherson (1990) the 'service' sector is defined as all areas of work excluding primary and secondary production; i.e. all those areas which do not involve the actual production of goods, whether they be raw materials or finished goods. The growth of the service sector is outlined in Callister (1990 pp. 6-8) and Haines (1989 pp. 17-19). Both demonstrate a trend towards an increase in the service sector throughout the century and predict an acceleration of this trend over the next decade. However, just three years after they were made, the employment forecasts in *Prospects* (National Sectoral Programme 1988) seem impossibly optimistic. In order to achieve the employment level forecast by this document the economy "will need to grow, on average, by 3.25% a year (between 1989 and 1992)" (Haines 1989 p. 14). Given the deepening recession of the past two years, such growth is impossible. Thus Haines (1989), Callister (1990) and MacPherson (1990) are all basing their claims on forecasts which have proved to be inaccurate even in the short term.

Nevertheless the trend towards an increase in the service sector seems clear. Callister shows (1990 p. 7) that between the years 1984 and 1989 there were significant declines in the primary and manufacturing sectors, but a sharp increase in the numbers of people employed in the service sector. However, before taking this as evidence of the structural effects of technological change, or a move to the 'new' economy, a number of questions need to be answered: To what extent are these changes due to specific economic conditions and

government policies, rather than long term structural change? Do the new jobs in the service sector conform to the descriptions of the 'new' economy offered by Callister (1990) and MacPherson (1990)? Is the category of 'services' an accurate and sensitive enough measure to demonstrate the kind of changes the authors are claiming? We will deal with each of these in turn.

Perhaps the best explanation for the growth in the service sector between 1984 and 1989 is a mixture of economic circumstances and government policies. Until 1987 Aotearoa experienced an economic boom, financed by unprecedented profits from the inflated share market and driven by equally high levels of business confidence. The finance, construction and tourism industries, in particular, grew very fast. However, the share market crash put an end to these speculative ventures, beginning a recession in the service sector which is still deepening. The continuing decline of the retail sector is a good example of the trend. The other explanation for the growth in the service sector during this period is government policy, and in particular the deregulation of the business sector. New services arising from deregulation include a new domestic airline, many new banks, private providers taking over from the public sector, and so on. Similarly, the downturn in farming and manufacturing industries was a direct result of government policy. The economic and fiscal position of 1991 is causing a further decline in employment, and much of that decline is likely to be felt in the service sector, including retail and wholesale trade, state services (such as recent cuts in the Department of Social Welfare and the Ministry of Education, and the reduction of about 1000 teacher places in 1992) and the hotel and restaurant trade. The case for an *inevitable* increase in the service sector, at least for the foreseeable future, has not been proved.

Moreover, the way the service sector has been defined by the Planning Council (and MacPherson), as all industry areas not directly involved in production, is not useful when trying to examine the effects and implications of technological change. There are huge areas within the service sector which are likely to be only minimally affected by the technological revolution, such as driving, cleaning, community and social services, most manual work and the hotel industry. Other areas, such as clerical work and most management positions will be affected inasmuch as they will use computers as tools, but these simply replace other tools and may not fundamentally alter the nature of the job. In a third category, some members of the industry will change their work practices radically, others hardly at all, for example teaching, nursing and the wholesale and retail trades. Moreover, the nature of the changes, and their effects, will not be the same within or across industry areas. Given this differentiation it is hard to see how the claims for the 'new' economy can be sustained. Many of these jobs have hardly changed at all. Most, anyway, have never worked on 'Fordist' production line principles, although certainly most have been, and continue to be, organised hierarchically.

Similarly, social changes may have led to the decline of some kinds of work (building, agriculture, manufacture) and the growth of others (hairdressing, tourism and catering). There is little or no evidence that this is in any way due to new technologies nor that the workers in the growth areas need more training than those in the declining ones.

Similar points can be made about the 'manual'/'non-manual' distinction which is so crucial to the educational argument. The Planning Council itself admits that the distinction is 'one of degree rather than one of kind.' Some of their own examples are very interesting here. Among manual workers are plumbers, carpenters, and farmers. Among non-manual workers are sales people, cooks and hairdressers. The Council surely would not want to hold that plumbing and carpentry are 'less skilled' than cooking or hairdressing or that the sales person is required to think more broadly or deeply than the farmer.

All in all, the documents reviewed fail to adequately define the 'new economy' or the kinds of workers it requires. They imply but never demonstrate that service industries will require higher levels of skill than the primary and manufacturing sectors did or that non-manual jobs (as defined) will need more knowledgeable workers than many of the manual jobs (as defined) which they will supersede.

Technology has transformed certain industries (printing, banking, computing, etc). It has contributed to various degrees of change in other industries. There is little or no evidence that the service sector *as a whole* is being transformed by new technologies, or that the workers in this sector are collectively in need of further education or training in technological and cognitive skills.

A recent American study is relevant here. Hertz (1991) found that in the U.S. *during a period of rapid employment growth* (1985-1989) 4.3 million persons were displaced from jobs. While nearly all service-producing industries grew during these years (in line with New Zealand data), about 48% of displaced workers had held jobs in service industries (p.4). The severity was explained in large part by 'the severe solvency problem of some banks and savings and loan institutions' (p.5). The point is that unemployment feeds off economic conditions rather than off levels of skill.

Educational implications

There are a number of serious problems facing the education system in trying to respond to the demands for the 'new' worker. We will examine briefly schooling and 'skills' and the disjuncture between the claims made and the reality; and the unemployment issue particularly in terms of the relationship between the outcomes of schooling (credentials) and work.

Schooling and skills

There is a major confusion about the meaning of the term 'skill' which complicates the argument and allows proponents of the position we are examining to move imperceptibly from one meaning to another. On an ordinary reading of the term, 'skills' refer to quite specific abilities such as the ability to ski, type, use the computer, repair a motor engine, remove an appendix, or design a bridge. At least part of the time proponents adopt this concept and argue that schools must be more sensitive to the needs for such skills. The problems with this view are that:

1. it is never made clear which skills are needed and how they can be provided, and
2. the skills needed seem ever changing and unpredictable and hence schools are being asked to keep changing to meet vague and ephemeral demands.

So, perhaps realizing this, skills are often defined more broadly: thus Callister (1990) refers to the need for the following skills:

'Ability to continue learning/adapting throughout life, communication/interpersonal skills, information skills, technology/computer skills, language skills, thinking/creative/problem solving, number skills, (1990, p.15).

In this broad sense there can be no dispute between 'the business sector' and 'education'. Of course schooling is about *these* 'skills'. (We would prefer, however, not to use the word 'skills' for wide-ranging cognitive and affective abilities). Much of the poor

communication between education and business spokespersons arises from the confusion between precise skills (like typing, computing, skiing) and broad cognitive abilities (like problem solving, language).

If we are using the broad concept, it is far from clear that more schooling means more 'skills' (an assumption of those who compare our retention rates unfavourably with those of other countries), or that there is any need at all for 'more input into curriculum from the business world' (Callister p.21).

Educationalists do have a lot to learn about higher cognitive abilities (skills, if you will). It is unlikely that the world of business has much to teach them. It is worth noting that one of the most important cognitive 'skills' is that of refusing to take anything for granted. The timid educational establishment has not found this congenial. It is doubtful if the world of business would be any more sympathetic, since such 'skills' might totally destroy the world of advertising, marketing, and public relations.

Schooling and unemployment

There is a major disjuncture between the demands on schools to prepare workers for the 'new' economy, and the reality of high levels of unemployment in the existing economy. Many young people stay at school because they have nowhere else to go. Schools are forced to respond, and are right to respond, to the reality of the worsening employment situation rather than to distant and esoteric claims for 'new' skills in the 'new' economy. Teachers have a more direct and realistic appreciation of the current labour market than policy-makers, and not surprisingly have little sympathy for arguments that they should be educating young people for a future economy that lacks definition and seems unattainable.

MacPherson states baldly that increased unemployment is being caused by the higher skill requirements of jobs and, presumably, the lack of skills amongst job seekers (1990 p. 14). This has been a familiar political position in Aotearoa over the past few years, one which has become increasingly difficult to sustain as the economy worsens. However, no examples are given by either author of jobs that cannot be filled because of a lack of skilled staff, and there has never been a serious study claiming significant numbers of such jobs. Also, both authors argue for the development of certain generic skills, which would not assist in filling vacancies for the kind of highly specific technical positions that are likely to be unable to attract suitable applicants.

On the other hand, there is evidence to suggest that length of schooling is not well correlated with employment prospects (see Snook 1989). Contrary to what is often suggested, the incidence of unemployment among the highly schooled (or skilled?) is not significantly different from that among the unskilled.

It is, of course, true that credentials are increasingly being used to screen job applicants. Thus it should be the case (in a sense, *must* be the case) that the more credentialed one is, the better chance she has of employment. Whether her knowledge (or skill) is any more developed is irrelevant. It is, then, quite surprising that despite *credential inflation* the unemployment rates of the well credentialed are so little different from that of the poorly credentialed. This suggests that the claim about our 'skills deficit' is purely gratuitous. This point is reinforced by the work of Thompson (1985) who found that the qualification level required for a selection of clerical jobs varied with market conditions: when the market slackened, the required qualification level increased; when the market tightened, the qualification level decreased. That is to say, the qualification was being used purely as

a selection device, not as an indication of skill.

The evidence, then, does not indicate a fundamental shift in the economy or a need for fundamental change in education. No one has demonstrated a 'skill gap' or provided any clear definition of what the 'missing' skills are. There has been no research on what our schools do teach much less on how they are deficient *vis a vis* schools of other lands. Arguments have traded on popular prejudice (schools are not fully doing their job), vague definitions (e.g. manual and non-manual jobs), unsubstantiated beliefs (eg. about the changing economy) and poorly analysed data on schools and unemployment.

Why, then, are these views so dominant and their proponents so persistent?

The politics of technological change

The importance of the arguments for technological change and the development of the new economy does not lie in the accuracy of the analysis of the present needs of the workforce or the prediction about the shape of the workforce in the future. What underpins these arguments is a fundamental debate about the nature of our society - the distribution of wealth and power, the social relationships between groups (eg. workers and management), and the kind of society we would like in the future.

When applied to education it suggests that the curriculum is outmoded and needs to be updated. There is a need for greater involvement of business people in schools and closer links made between the school and the world of work. All of these points have been controversial in educational theory since the beginning of organised schooling. Those who talk about technological change, skill, deficits and (recently) competitive advantage are using these ideas to support one view of education.

A basic weakness in all future planning of human resources, especially in relation to education, is that decisions of human beings are themselves influential in future developments. The answer to the question 'how should we educate our young people?' cannot be derived from 'predictions' for the answer to it will affect those very predictions. To take an extreme example: if we were to decide as a nation to educate the next generation on egalitarian principles (and were to be successful) the future would be very different from that envisaged by those of a different political persuasion. Our point here is not to advocate such a strategy but to stress that in human affairs we are not passive 'end products' of technological change but active participants in that change. The future, at least to some extent, is in our hands. It is hard to escape the conclusion that when the Treasury or the Roundtable 'predict' our future they are telling us that the future is (or should be) in *their* hands.

What is urgently needed is wide debate, not about tendentious empirical claims, but about the kind of society New Zealanders want and the kind of education system needed to achieve it.

References

Callister, P. (1990), *Tomorrow's Skills, revised edition*, Wellington, New Zealand Planning Council.

Callister, P. (1990), Education and Employment, *Set, 2* (7).

Catherwood, V. (1985), *Young People, Education and Employment*, Wellington, New Zealand Planning Council.

Department of Labour (1988), *Report of the Working Group on Employment Policy*, Wellington, mimeo.

Haines, L. (1989), *Work Today: Employment Trends to 1989*, Wellington, New Zealand Planning Council.

Haines, L. and Callister, P. (1989), *Tomorrow's Skills*, Wellington, New Zealand Planning Council.

Hawke, G. (1988), *Report of the Working Group on Post-Compulsory Education and Training*, Wellington, Government Printer.

Hertz, Diane (1991), Worker Displacement Still Common in the Late 1980's, *Monthly Labour Review*, 114: 5, 3-9.

Lauder, H., Brown, P. and Hughes, D. (1990), The Labour Market, Educational Reform and Economic Growth, *New Zealand Journal of Industrial Relations*, 15, 203-218.

MacPherson, E. (1990), *Education in New Zealand: A Response to the New Environment*, Paper presented at the Pacific Economic Co-operation Conference Workshop on Human Resources Development: Issues and Prospects, Singapore, November.

Pole, N. (1989), Participation in Post-compulsory Education and Training: Trends in the Eighties, *Research and Statistics Department Bulletin*, 21, May, Wellington, Department of Education.

Sexton, S. (1990), *New Zealand Schools and Current Reforms*, Wellington, New Zealand Business Roundtable.

Smith, Hon. L. (1991), *Education Policy: Investing in People - Our Greatest Asset* (Wellington, Government Printer).

Snook, I. (1989), Inflated Expectations, Qualifications and Job Prospects, *Set*, 1 (2).

Snook, I. (1990), Education and Employment: a Brief Reply. *Set*, 2 (7).

Thompson, G. Brian (1985), 'Entrants to the Labour Force; Changes in Market Conditions and Educational Qualifications of Youth', *New Zealand Journal of Industrial Relations*, 10: 15-28.

Treasury, The (1987), *Brief to the Incoming Government, Volumes 1 and 2*, Wellington, Government Print.

Treasury, The (1990), *Brief to the Incoming Government*, Wellington, Government Print.