NEW ZEALAND

Planning Council

Te Kaunihera Whakakaupapa
Mo Aotearoa

OUR EDUCATION AND TRAINING CHOICES –

POST COMPULSORY EDUCATION AND TRAINING IN NEW ZEALAND

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LESLEY HAINES
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EXECUTIVE SUMMARY

POST COMPULSORY EDUCATION AND TRAINING IN NEW ZEALAND TODAY

1. By comparison with other OECD countries New Zealand rates of participation in formal post compulsory education and training are low. This is true both for young people undertaking initial training and also for older people pursuing further education and training.

2. New Zealand students on average leave school earlier than their counterparts in most other OECD countries. They are also less likely to continue on with tertiary level training. For example, in New Zealand 46% of 17 year olds are undertaking some form of education and training compared with 89% of the same age group in Germany, 78% in Sweden and 87% in the United States.

3. In comparison with other small OECD countries New Zealand rates of participation in trade and middle level tertiary education are low, whilst the proportion of our labour force which has professional training is on a par. This suggests that New Zealand may be underinvesting in trade and middle level education and training.

4. Maori students are heavily underrepresented in PCET at almost all levels [the exceptions being Access and Maori Access]. Young Maori people leave school earlier and considerably less qualified than their non Maori schoolmates. At Universities and Polytechnics the Maori student share is very much less than the Maori share in the total population.

5. While there is little difference between the enrolment rates of young men and young women in post compulsory education and training, there are still major differences between the genders in areas of specialisation.

6. Students from higher socio economic backgrounds are overrepresented throughout most of the post compulsory education and training area - in secondary schools, polytechs, teachers colleges and universities.

7. Formal apprenticeship training is declining in importance. This is partly a reflection of the growing proportion of employment opportunities in the services sector. Training for service sector occupations is not generally by apprenticeship. Currently there are trends towards reducing the length of apprenticeships and increasing the proportion of training time spent in formal training courses.

SKILLS WHICH WILL BE IN DEMAND IN THE FUTURE

8. Throughout the OECD a growing number and proportion of jobs is expected to come from the services sector of the economy. This structural change is already occurring in New Zealand and is expected to continue.

9. Research by the Hudson Institute in the USA indicates that these service sector occupations will demand greater average levels of skills in the workforce.

10. The occupations which are expected to grow the fastest are those requiring high levels of initial education, especially mathematics, reasoning, and communication

skills. Those jobs expected to grow only slowly or to decline are those with lower than average skills.

11. Research by the OECD Centre for Research and Innovation in Education [CERI] shows that producers and users of services are increasingly in direct contact with each other. This points to an increased need for workers with well developed communication skills.

12. Both the Hudson Institute and the CERI studies show that the external labour market [part time, temporary and contract work] will continue to grow, particularly in countries without strong traditions of enterprise training such as New Zealand. This destabilisation and diversification of employment conditions, combined with the raising of required skill levels and the need for multiskilling may change the balance of on the job and off the job training.

13. No such projections and research are available for New Zealand but on the basis of existing evidence it is reasonable to conclude that the same kind of trends will occur here.

THE YEAR 2000 - NEW ZEALAND'S PAID WORKFORCE

14. In the next decade and beyond the proportion of older workers will rise considerably. The proportion of women in the paid workforce will continue to grow. Maori people will form an increasing share of the labour force, with 25% of the projected increase in the working age population to 2006 being Maori. The proportion of Pacific Islanders will also rise.

15. Overall the labour force will be increasingly composed of those groups which currently are less likely to pursue post compulsory education and training. Raising the participation rates of these groups is important for equity reasons. It is also likely to be important for economic growth.

INTERNATIONAL COMPARISONS

16. Comparison with Germany, Japan and the USA shows wide variation in the mode of provision of PCET. At one end is Germany with a predominantly vocational model - at the other is Japan where PCET is school based and employers expect and get employees with an unspecialised education.

17. Despite these variations all three countries place heavy emphasis on training beyond immediate economic need. Flexibility and the ability to transfer skills and to undergo further training are seen as very important outcomes. Given the likelihood of accelerating technological change these outcomes will be of even greater importance in the future.

SCHOOLS

18. Over the 1976-1986 period the proportion of 15 year olds staying on at school increased, whilst the proportions of 16, 17 and 18 year olds remained unchanged.

19. At Form 6 level, the removal of the University Entrance examination in 1985 and the accompanying elevation of Sixth Form Certificate to sole sixth form qualification has

broadened the range of study options for most sixth formers considerably. The range of Form 7 courses need to be similarly broadened.

20. Given the CERI studies indication of the increasing emphasis on adaptability and multi skilling there is a good case for extending a broad common core curriculum to Form 5.

21. Development of a National Leaving Profile for all school leavers would provide much better information about the capacity of each young person. This would be valuable to potential employers, further education institutions and to young people themselves.

22. The links between schools and other educational institutions need to be strengthened. Recent developments such as Link, transition, work exploration and work experience programmes need to be further developed. All students need career information and guidance before they begin subject specialisation.

23. A more flexible policy which allows teachers to work at other jobs for periods of their working lives and allows "non-teachers" to be involved in the classroom would help to reduce the isolation of school from the world of work.

24. Sixth form colleges, freed from the custodial role required with younger students, could be more flexible with hours, staffing, and contact with industry and may be more attractive to adults seeking retraining or further training.

A YOUTH TRAINING SCHEME

25. Consideration should be given to establishing a youth training scheme in New Zealand. This would offer all 16 and 17 year olds who wanted it job related training for up to two years. Training would be primarily on the job, with a significant off the job component. The training structure would be modular and could be based on occupational or industrial skill families. Certification would be based as far as possible on competency, and would be administered by a National Validation Authority.

POLYTECHNICS

26. Data from polytechnics shows that almost as many suitable prospective students were turned away as were accepted in 1988. There is an urgent need for expansion of the system so that it more nearly meets the demand for its courses. Managerial power needs to be devolved to each individual polytechnic so that the system can be more responsive to local needs. Course development should aim towards a modular system of training with links where possible to those courses offered by other education and training institutions.

FUNDING

27. The question of who should pay for increasing PCET participation rates is closely related to who benefits. Individual trainees, industry and the taxpayer all benefit to some extent from PCET, although the relativity of these benefits is impossible to determine.

28. In contrast to many other OECD countries employers make little direct contribution to funding formal PCET in New Zealand.

29. The extent to which parents are responsible for the financial support of their children differs across countries. In many other OECD countries parents are considered responsible for the major part of the financial support of their children up to the age of 18 years.

30. The current system of income support for young people may discourage young people from pursuing PCET. A system aimed at encouraging young people to train and targeted more to those from disadvantaged backgrounds may encourage more young people to continue their education and training. The recently announced reforms to income support for students and the young unemployed are broadly consistent with this. However, in order to be effective they must be accompanied by an expansion of training places.

LINKAGES

31. The linkages between different PCET providers are very important. Ideally course development should aim towards a more modular system, with increased provision for cross crediting between institutions. This must be balanced, however, against the need to retain institutional flexibility.

INFORMATION FLOWS

32. The quality of information flows is critical to the functioning of any system. Good information about available training courses and prospects for different occupations needs to be made available to parents, teachers, career counselling professionals and to the existing and potential workforce.

33. A national computerised database, using Videotex or some similarly widely accessible medium, could provide information on occupations and training courses. This would require the cooperation of a number of agencies and central coordination. Schools, tertiary educational institutions and the private sector could collaborate in its development.

THE MAORI PEOPLE

34. As shown earlier, the current school and PCET systems are not equipping most Maori people with the skills needed in the workforce of tomorrow. There is increasing doubt as to the capacity of the current system to change sufficiently to cater for the needs of the Maori people and with this has come growth of alternative Maori initiatives. So far there has been no systematic and controlled evaluation of these alternatives. Evidence from such research would assist in the formulation and implementation of much needed more successful modes of schooling and PCET for the Maori people.

PART ONE - INTRODUCTION

This paper is an examination of the role of formal postcompulsory education and training in providing the mix of skills required by the labour market. Post compulsory education does, of course, have other important functions but it is its labour market function which is considered here.

Formal post compulsory education includes all formal education and training of persons over 15 years of age - and thus encompasses those remaining in secondary school or attending polytechnic, university or any private vocational course open to the public. It includes full time, part time, block course or extramural participation, and refers to all education and training, whether "initial" or "retraining". "Education" and "training" can be seen as opposite ends of a continuum - "education" as skills which are general and readily transferable, and "training" as skills which are specific, task related and not transferable. It is acknowledged that formal education and training is only one of the means of providing an appropriate mix of skills in the workforce. On the job training is very important too but will be discussed in a subsequent paper. The remaining learning mode - individual informal learning - is outside the focus of this paper.

Economic and demographic trends have focussed increasing attention on education and training. Rapid structural change has changed the demand for skills in the workforce. The decline in both relative and absolute terms of the manufacturing sector and the corresponding rise in the services sector, common to all developed economies and less advanced as yet in New Zealand, has led to rapid and expected continuing change in the demand for skills in the labour force. Concurrent with this structural change there has been rapid technological change, particularly the development and spread of information technology. This also is expected to continue, probably with increased momentum. There has been some rather polarised debate about the implications of this technological change on the demand for skills in the labour force. However, research on change to date indicates that rather than the feared deskilling of jobs, the predominant effect of technological change has been to increase the demand for skilled labour across a wide spectrum of industries and occupations. The potential of the new technologies to enhance productivity depends on the quality of the labour force. It is no longer appropriate to view productivity as simply stemming from the combination of physical capital and labour. Human capital itself is the major resource contributing to productivity increases through continuous development and efficient utilisation of new technology.

Demographic trends too have forced a reassessment of the role of education and training. The entry of a large cohort of young people into the workforce at a time of poor economic performance has contributed to increasing unemployment, particularly amongst those young people. This has prompted increased recognition of the importance of the role of education and training in supplying the appropriate mix of skills in the labour force, and in retraining and upgrading the skills of those currently unemployed.

Studies of the relationship between economic growth and the quality of labour inputs are fraught with difficulties. The various approaches to measuring the contribution of labour to economic growth each have their limitations, not to mention the problems of cross country comparisons. However according to the OECD, [Education and Training for Manpower Development, 1986] the evidence from such analyses broadly agrees that a more qualified labour force improves economic performance, broadly distributed qualifications are better than narrowly distributed, and that many forms of education and training can be effective in ensuring an adequately trained workforce. Therefore what is needed is not a detailed and inflexible plan for training in particular skills,

but a general increase in the level of education and training with emphasis on broad based, transferable skills.

This paper continues in Part Two with a description of the current system of post compulsory formal education and training in New Zealand, making some international comparisons. Part Three describes education and training in Germany, Japan, the United States and the United Kingdom. Expected trends in the demand for and supply of labour in New Zealand are presented in Part Four. In the final section, against the background thus established, the implications for New Zealand policy and practice are discussed.

PART TWO - NEW ZEALAND'S CURRENT SYSTEM OF FORMAL POST COMPULSORY EDUCATION

POST COMPULSORY SECONDARY SCHOOLING

Beyond age 15 attendance at school is voluntary. The decision by students whether to stay on beyond this point is influenced by many factors, including their success in the school system thus far and the opportunities available to them elsewhere in either employment or alternative education and training. During the past fifteen years the proportion of students staying on to Forms 5, 6 and 7 has increased as Table 1 illustrates:

TABLE 1 - RETENTION RATES AT NZ SECONDARY SCHOOLS

	1975	1985	1987
Form 3 - Form 5	79.6	86.2	88.0
Form 3 - Form 6	46.0	54.1	57.0
Form 3 - Form 7	12.9	17.2	23.5

[Source: Education Department, Research and Statistics Division]

Changes to sixth form courses and changes to the entry requirements for Forms 6 and 7 have increased the number of students staying on to sixth and seventh form level. There are also more students staying on to Form 5 level - this reflects the fact that a smaller proportion of students leave school at 15. More students reach Form 6 because sixth form entry requirements have been relaxed: correspondingly there are fewer students repeating Form 5. Similarly more students reach Form 7 because entry requirements have become easier and there are fewer second year sixth formers. When viewed with Table 1, Table 2 gives a clear indication of the trends:

TABLE 2 - PROPORTION OF SECONDARY SCHOOL STUDENTS REMAINING AT SCHOOL BY AGE (%)

	Age of Student			
Year	15	16	17	18
1976	84	65	34	7
1981	88	68	33	6
1986	91	66	34	6

[Note: includes full time students only]
[Source: Education Statistics, 1977, 1982, 1987]

Over the last ten years the proportion of 15 year olds staying at school has increased, but the proportion of 16, 17 and 18 year olds remaining at school has been constant. By comparison with other OECD countries New Zealand students leave school early. One reason for this is that our school leaving age is at least a year lower than in most other OECD countries. Another is convention - for example in the United States although the leaving age is 16 most students do not leave until they are 18.

The school retention rate for girls, having shown an increase over a number of years, has now become close to that for boys. Girls are less likely to leave school with no formal qualifications - in 1986 24% of girls and 28% of boys left school with no formal school qualification. A higher proportion of girls leave school with Sixth Form Certificate, but fewer with a Form 7 qualification. There is considerable difference in areas of subject specialisation by gender as Table 2 illustrates.

TABLE 3
SCHOOL CERTIFICATE 1986 - SELECTED SUBJECTS- % OF CANDIDATES BY GENDER

	% Female	% Male
Technical Drawing	10	90
Agriculture	20	80
Physics	23	77
Mathematics	49	51
ALL PAPERS	51	49
Biology	60	40
Home Economics	85	15
Shorthand Typing	99	1

[Source: Education Statistics of New Zealand, 1987]

Maori retention rates are still considerably below Pakeha rates, as the following figure shows:

TABLE 4
SECONDARY SCHOOL RETENTION RATES - MAORI AND NON MAORI STUDENTS [%]

	Forms 3-5		Forms 3-6		Forms 3-7	
	Maori	nonMaori	Maori	nonMaori	Maori	nonMaori
1976	59.7	85.4	18.5	54.8	3.0	15.3
1981	63.5	88.8	23.5	58.9	3.2	17.7
1986	65.3	91.4	25.2	59.5	5.4	22.3

[Source: Education Department, Research and Statistics Division]

Table 4 shows that non Maori students are over twice as likely to complete a Form 6 year as their Maori counterparts and over four times as likely to continue on to Form 7. Correspondingly, Maori school leavers are considerably less well qualified than their non Maori schoolmates, as Table 5 demonstrates:

TABLE 5
HIGHEST SCHOOL QUALIFICATION OF SCHOOL LEAVERS 1985 [%]

	Maori	All leavers
No school qualification	61.3	31.6
SC in 1-2 subjects	11.7	11.2
SC in 3+ subjects	6.4	10.9
Sixth Form Certificate	11.3	14.1
UE or Higher SC	7.8	20.9
Uni bursary or scholarship	1.5	9.4
	100.0	100.0

[Source: Education Department, Research and Statistics Division]

Data from Project FAST, an Education Department pilot project surveying all Year 3, 4 and 5 students in the Central region in 1987, indicates that only 25% of all third year students had discussed their future with the school's careers advisor, and less than 22% with any of their teachers. These figures rise to 40% and 30% for 4th year students, and 55% and 45% for Year 5 students. These figures are disturbingly low and are presumably lower at Year 1 and 2 levels. Specialisation in subjects usually begins at Form 5 level or earlier - thus effective career counselling must begin in the junior secondary school for all students.

Early leavers, who typically have negative attitudes towards school, tend to move into unskilled jobs which involve no further formal training. Three years after leaving school a shift to positive attitudes towards school has been noted [Kerslake,1984].

In 1985 76% of schools received assistance from the Vocational Guidance section of the Labour Department, down from 82% in 1976 when the system was run through the Education Department. 90% of schools had their own career information and guidance systems.

Many schools run transition and work experience schemes for those at risk of unemployment. There have also been recent moves to increase linkages between the schools and other training institutions, as in the LINK scheme, as part of moves to make Form 6 more appropriate to the needs of its users.

Schools also offer second chance education within the mainstream system, through evening classes or through the Correspondence School. These opportunities tend to be pursued mainly by women [eg 73% of adults studying with Correspondence School are women]. However the role of second chance education through the formal school system is minor - 1527 Full Time Equivalent students in 1986.

POLYTECHNICS

[includes Community Colleges, the Technical Correspondence Institute and the Central Institute of Technology]

There are 24 polytechnics which offer full time courses, full year part time courses, block courses [full time continuous attendance for one week or more], short courses [part time attendance for less than 26 weeks] and seminars [full time courses of less than a week's duration]. In 1986 polytechs had a total "roll" [includes part time, full time and block course students and may double count some students] of approximately 220,000. Of these there were approximately 9,500 full time students, 68,500 part time full year students [about half of these through the Technical Correspondence Institute], 35,000 enrolments at block courses, 78,000 at short courses and 30,000 at seminars. Short courses and seminars are generally classified by the Education Department as Level 9 [being education not definable by level(!), with no well defined educational prerequisites and including community and hobby classes], and approximately 50% [author's estimate based on course titles and numbers presented in Education Statistics, 1987] are recreational rather than directly vocational. The full time, full year part time and block courses provide mainly vocational education. Most trade and technical training, administered by the Trades Certification Board and the Authority for Advanced Vocational Awards, is part time or by block course. Men are the majority of these trainees. Traditionally, polytechs have delivered most of their education on a part time or part year basis. Full time courses expanded rapidly in the early 1970's, but the rate of expansion has slowed markedly since about 1978. Most of the full time courses are in areas not covered by the Trades Certification Board or the Authority for Advanced Vocational Awards. Full time courses range in content over information processing, health related sciences, technical, commerce, engineering, secretarial, hotel and catering, and personal enrichment. Women are the majority of users of full time courses - of the almost 7000 full time women at polytech in 1986 over 3000 were training in nursing and other health related fields, and over 1500 were doing secretarial courses.

Students from higher socio-economic backgrounds are overrepresented at polytechs, as shown by Table 6 on page 11. The extent of this varies considerably over the different courses. For example, trade certificate trainees are far more likely to come from a lower socio-economic status background than nursing trainees. However, as the table shows, the extent of this overrepresentation is not nearly as great as for university students. Benton [1987] states that Maori students are not well represented at polytechnics. There is no national data to support this but he cites the Auckland Technical Institute, where less than 2% of students in 1986 were Maori, as an example.

TABLE 7
STUDENTS AT NZ UNIVERSITIES IN 1987 BY ETHNIC GROUP
[% Distribution]

Ethnic Group	Internal students		External	New Zealand Population
	Full Time	Part Time		
Maori	3.2	5.4	3.2	12
Pacific Islander	2.8	2.1	2.0	4
European/Other	94.0	92.4	94.7	82

[Note: Uses self classification of ethnic group]
[Source: University Grants Committee, unpublished material]

As Table 7 shows, participation rates for Pacific Islanders are highest for full time internal students - this is probably partly a reflection of the age structure of the Pacific Island population living in New Zealand. By contrast, Maori participation rates are significantly higher for part time students.

The following tabulation for Waikato University, [thought to have the highest rates of Maori participation in New Zealand] using a descent definition of Maori, gives an indication of Maori participation rates by age.

TABLE 8
PARTICIPATION RATES FOR WAIKATO UNIVERSITY, 1987

Age Groups	Maori Descent			Non Maori Descent		
	M	F	T	M	F	T
18-24	1.3	1.7	1.5	5.8	6.0	5.9
17, 25-39	0.3	0.7	0.5	0.8	1.3	1.1

[Source: Pool, 1987]

Thus a young Waikato non Maori male is 4.5 times as likely to attend University as his Maori counterpart, whilst the corresponding figure for females is 3.5. For mature students the disadvantage is not as great but it is still only half as likely that a Maori mature student will attend university as his Pakeha counterpart. The Waikato data is probably not fully representative of the national picture, and reflects the innovative programmes being run there for older Maori people.

Many Maori people feel that universities are basically Pakeha institutions which will never satisfy Maori needs. This view has lead to the establishment of Te Wananga O Raukawa, a private Maori university, with little formal state funding. Te Wananga offers courses in law, health and administration and aims to combine traditional Pakeha academic study with Maori and iwi perspectives. Some state funding is involved, through the Education and Labour Departments, but Te Wananga is not officially recognised as an formal educational institution. The Watts Report [NZ Universities Review Committee, 1987] suggests that this concept is worth further exploration.

Another model, proposed by the Tainui Trust Board, is the establishment of an "Endowment College", initially at the University of Waikato. The aim is to create a distinct Maori environment, based upon Maori cultural values, within the wider university. The Watts Committee also endorsed serious consideration of this concept.

Participation rates by gender are close to equal. In 1986 59% of all part time and 62% of all external students were women. 43% of all full time internal students were women.

Overall, in 1986, 50.5% of all those enrolled at university were women. However, the numbers of graduates by gender is less equal. In 1986 58.5% of all first time graduates were men, as were 63% of all those gaining post graduate qualifications.

There are also considerable gender differences in areas of specialisation as Table 9 demonstrates. Thus, women are predominantly enrolled in the arts and social sciences and are underrepresented in almost all other degree programmes. At post graduate level women are less likely to pursue their studies than men.

TABLE 9
NZ UNIVERSITY - 1986 ENROLMENTS IN SELECTED DEGREE PROGRAMMES BY GENDER
[% distributions]

Degree Group	% Male	% Female
Engineering	93	7
Doctor of Philosophy	69	31
Science	64	36
Commerce	61	39
Agriculture	59	41
Masterate [any specialty]	59	41
Medicine	58	42
Bachelors Honours	56	44
Law	54	46
ALL STUDENTS	49.5	50.5
Social Science	31	69
Arts	30	70
Education	21	79
Home Science	0	100

[Source: Education Statistics of New Zealand, 1987]

FORMAL APPRENTICESHIP

Formal apprenticeship is basically a type of on the job training, with an increasingly large off job component. As such it falls outside the major focus of this paper and will be examined more closely in subsequent work on work based training. The following is a brief description of trends in formal apprenticeship training.

There were over 26,000 apprentices in training in 1987. Formal apprenticeship, where training requirements are stipulated by a national apprenticeship committee, is declining in importance, as indicated by the 1987 statistics where new apprenticeship contracts entered into declined 15% and the number of completed contracts declined 21% over the previous year.

The number of new apprenticeships tends to move in response to the business cycle - in boom times the number increases, whilst in depressed times the number is reduced. Consequently, given the time lag taken to train apprentices, this pattern often implies that there is a shortage of skilled labour during booms and a surplus during times of depressed demand.

Alongside the relatively short term fluctuations of the business cycle are longer term structural changes in the economy. Formal apprenticeships tend to be associated with many manufacturing industries. Employment in manufacturing, with the exception of the building industry, has shown little growth in recent years and is expected to show little future growth. The major growth in employment is expected in service industries [National Sectoral Working Group, 1986]. Training for these service occupations is not generally by way of formal apprenticeship.

Current government policy is aimed at reducing the length of apprenticeships and increasing the proportion of formal time spent in formal courses, usually at polytechnics. Pre-apprenticeship courses based in polytechnics have been established for many trades - there is no requirement for concurrent related employment for these courses. There is an increasing emphasis on competence rather than on time serving as a means of trade training.

In 1988 89% of the new entrants to apprenticeships were from the top four socio-economic groups [76% of Form 3 students come from these groups]. 88% of the 1988 entrants to apprenticeships were male - the only trade where women are currently apprenticed in significant numbers is hairdressing, which accounted for 75% of all female apprentices in 1987.

ACCESS AND MAORI ACCESS

Access and Maori Access [MAccess] are government training schemes to assist the employment prospects of those disadvantaged in the labour market. They are targeted towards those who are unemployed, particularly long term; to those who are young, Maori or Pacific Islander; those who have language or literacy problems or no formal school qualifications, and towards single parents. Training providers are paid more for training those who score higher on the list of targeting factors. Thus training courses contain a large proportion of people who would not normally have sought further education and training, particularly those who are unable to find jobs. MAccess and Access aim to provide marketable skills which are in local demand, and to supplement basic literacy, numeracy, social skills and work habits. Regional councils and in the case of MAccess, special committees formed by tribal authorities and trust boards, decide who should provide this training on the basis of proposed course contents and costs. Access and MAccess aim to have competency based certification, offering trainees the opportunity to gain qualifications normally gained in the formal educational sector. At present this is not the case.

In the year ended March 1988 12,351 people received Access training. The Labour Department estimates the average course length is about 12 weeks, with an estimated reentry rate of 15%. The estimated average full time full year student equivalent cost is $17,000, including trainee allowances and payments to training providers. Polytechnic courses are generally the most expensive, employer courses the cheapest, with courses run by community groups falling in between.

As at March 1988, 38% of all student places under Access were provided by non Maori community based groups [eg church groups, the YWCA], 30% by Maori community based groups [mostly marae groups or trusts], 24% by polytechnics, 4% by public sector employers, and 4% by private sector employers.

Of the 11,625 trainees on Access courses at the end of March 1988, 53% were Maori, 9% were Pacific Islanders and 35% were Pakeha; women formed 49.5% of the total; 45% of those on Access were aged 19 or under, 19% were in the 20-24 age group, 28% in the 25-

39 group and 7% were aged 40 or over; 69% of those on Access were previously registered as unemployed, and an estimated 35-40% of trainees had language and literacy difficulties. Data on the skills content of Access courses is not yet available nationally.

In the March 1988 year an estimated 3000 full time full year trainee equivalents trained under MAccess. Course lengths varied from 6 to 42 weeks, with estimates of an average length of 20 weeks, with an estimated re-entry rate of 8%. The 1987-88 MAccess budget was $43 million, which gives an estimated expenditure of $14,300 per full time full year student equivalent per annum. This estimate excludes some departmental administrative support, but includes trainee allowances as well as payment of training providers.

In general MAccess training providers tend to be community based organisations which have been set up especially for the purpose of providing MAccess training. Almost all of the training providers are Maori - very little use is made of polytechnic or public sector training providers.

Of the 4857 MAccess trainees in the year ended March 1988, 86% were Maori, 6% were Pacific Islanders, and the remaining 8% European or other; 44% of trainees were female; 63% of MAccess trainees were unemployed prior to commencing their Access course; 41% of trainees were aged 19 or under, 23% were in the 20-24 bracket, 28% in the 25-39 bracket and 8% were aged 40 or more - a pattern remarkably similar to that for Access trainees.

OTHER AGENCIES

A few large enterprises provide off the job training to meet their own training needs eg Air NZ, NZ Police.

There has been a recent growth in private organisations which provide off the job training, particularly in information technology, marketing, and communication skills. They tend to be in areas of rapidly expanding demand for skills, where the public sector has failed to expand supply accordingly.

TABLE 10

FORMAL POST COMPULSORY EDUCATION - ROLL NUMBERS BY AGE OF FULL YEAR STUDENTS (1 JULY 1986)

Age of students	15	16 @	17	18	19 &	20-24	25-29	30-34	35-39	40 +	TOTAL
Type of Institution											
Primary School	235	470									47
Secondary School											
a - full time	56785	41260	20481	3663	964						663
b - part time # *	508	1100	1389	1765	1715	8582	6621	6242	5907	15266	485
c - total	57293	42360	21870	5428	2679	8582	6621	6242	5907	15266	1149
Teacher Training											
(full time)	0	0	163	564	565	1405	318	202	146	99	34
Polytechnic											
a - full time	14	508	1933	1876	1537	2346	564	310	198	157	94
b - part time $	494	1441	3543	5823	6922	20260	9583	6543	4049	10462	686
c - total	508	1949	5476	7699	8459	22606	10147	6853	4247	10619	780
% part time	97.2	73.9	64.7	75.6	81.8	89.6	94.4	95.5	95.3	98.5	
University											
a - full time	0	0	608	6025	6698	16870	2699	1075	608	577	351
b - part time	0	0	252	863	933	6060	5529	4404	3519	5182	267
c - total	0	0	860	6888	7631	22930	8228	5479	4127	5759	619
% part time			29.3	12.5	12.2	26.4	67.2	80.4	85.3	90.0	43.
Total Full Time	57034	42238	23185	12128	9764	20621	3581	1587	952	833	1148
Total Part Time	1002	2541	5184	8451	9570	34902	21733	17189	13475	30910	143
TOTAL IN TRAINING	58036	44779	28369	20579	19334	55523	25314	18776	14427	31743	258
% Part Time	1.7	5.7	18.3	41.1	49.5	62.9	85.9	91.5	93.4	97.4	55.
TOTAL EST POPULATION ^	62560	62370	60810	58780	57380	279060	267940	246270	239440	1121190	2393
EST PARTICIPATION RATE %	92.8	71.8	46.7	35.0	33.7	19.9	9.4	7.6	6.0	2.8	10

Notes to Table:
@ - Primary figures include pupils aged 16 and over
& - Secondary figures include pupils aged 19 and over
# - comprises evening classes, Corr school and one intermediate school
* - the 40+ group includes 3775 students whose ages were not available
$ - the 40+ group includes 3610 students whose ages were not available
Data disaggregated by age not available for those over 40
^ - Dept of Statistics 1986 estimates

Source: Education Statistics, 1986

SUMMARY

Table 10 gives a summary of Post Secondary Educational Attendance, showing the balance and distribution between institutions. Due to difficulties in the comparability of data it covers only full year students, thus excluding those on short courses, such as those run under M/Access. It covers only the major post compulsory publicly funded education institutions, and thus excludes private training schools and specific institutions like Police College.

As can be seen from Table 10, in 1986 the majority [about 72%] of 16 year olds were undertaking some form of full year formal education or training. About 2/3 of them were at secondary school. The figures drop dramatically for 17 year olds where the participation rate drops to 47%. This decline is a reflection of the near halving of the number of those remaining at school - although this is compensated to some extent by those school leavers going on to university or polytechnic. The participation rate for 18 and 19 year olds is around 34%, these being predominantly either full time at university or part time at polytech. Of the 20-24 age group 20% are in some kind of education or training - once again the dominant modes are full time university and part time polytechnic. Teacher training is dominated by those in this age group. Participation rates continue to tail off after this age group, with part time university and part time polytech most likely. Full time training or education is the predominant mode for 16-19 year olds - part time is predominant for those over 20.

Students from higher socioeconomic backgrounds are overrepresented at all of the formal institutions. Maoris and Pacific Islanders are underrepresented. Access and MAccess stand in sharp contrast - here the usually overrepresented groups are underrepresented. Overall throughout the PCET system the participation rates of women are approaching those of men although their areas of specialisation are quite different.

INTERNATIONAL COMPARISON

There are major difficulties in making direct comparisons of rates of participation in post compulsory education between countries. There is a lack of comparable data. The structure of education varies greatly between countries - for example the length of training courses, and the proportions of students who study full time, part time or on the job. Nevertheless, by almost all international measures New Zealanders' participation in post compulsory education is low, as Table 11 indicates:

TABLE 11

EDUCATION AND TRAINING - RATES OF PARTICIPATION OF 16-19 YEAR OLDS
[% of age group, full time and part time combined]

	16 years	17 years	18 years	19 years
Australia [81]	77.3	59.2	42.0	37.4
Austria [81]	87.1	83.7	76.5	45.6
Belgium [82]	86.5	75	57	43
Canada [81]	88.6	71.6	42.1	30.0
Denmark [80]	86	68	61	50
Finland [78]	87.5	75.4	58.8	34.5
France [81]	83.9	68.9	45.2	30.0
Germany [81]	92.1	89.3	71.9	45.9
Italy [81]	69.1	70.3	51.3	29.4
Japan [80]	84	84		
Netherlands [82]	97.8	84.7	62.8	43.7
NEW ZEALAND [82]	74.4	46.5	32.6	30.9
Portugal [77]	39.2	35.0	34.5	27.8
Spain [80]	53.4	50.1	37.1	27.5
Sweden [80]	87.4	78.4	44.7	23.5
Switzerland [83]	85.9	81.6	73.1	52.8
United Kingdom [81]	68.0	52.8	37.0	28.5
United States [82]	94.3	87.1	54.7	40.9
REST OF OECD AVERAGE	81.0	72.1	53.1	36.9

[Note: The REST OF OECD AVERAGE is a simple unweighted average and excludes New Zealand.]
[Source: Education and Training for Manpower Development, 1986]

When listed in rank order, using the data from the table above, out of 18 OECD countries New Zealand's 1982 participation rates rank 14th for 16 year olds, 17th for 17 year olds, 16th for 18 year olds and 10th for 19 year olds.

A recent publication by The Treasury [The Treasury, 1987] questions the assertion that New Zealand participation rates at post compulsory levels are low when compared with other OECD countries, concluding that:
"the now almost conventional wisdom that New Zealand is lagging behind the rest of the world in the tertiary sector does not appear correct" [p187].

The basis for Treasury's argument is that according to OECD figures New Zealand appears to come fifth out of ten for educational enrolments of 18 year olds if non vocational secondary schooling is excluded and third out of ten when comparison is made of the university enrolments of the same age group. These statistics need further examination.

As Boston [1988] points out, the choice of 18 year olds as a basis for comparison raises problems. In many European countries and in the USA and Japan many 18 year olds are still attending secondary school. By contrast New Zealand tertiary students commonly begin their studies at 17 or 18. The fact that New Zealand comes fifth out of ten if non vocational secondary schooling is excluded reflects this.

In this paper it will be argued that it is participation rates in post compulsory education, be it in school or the tertiary setting, which are important. Viewed in this context the fifth out of ten for educational enrolments, excluding non vocational secondary schooling, is not the relevant statistic. The Japanese and the Americans have long taken the view that non vocational secondary schooling plays an important role in producing a readily trainable and adaptable workforce. Post compulsory secondary schooling must be seen alongside tertiary education as a means of improving the productivity of the potential workforce. Thus it is rates of participation in all forms of post compulsory education which are the relevant statistics. On this score, as shown in Table 11, New Zealand's participation rates by OECD standards are low.

As further evidence for their conclusion the Treasury refers to a UNESCO report which indicates that in the early 1980's New Zealand comes out third out of 18 in terms of enrolments per 100,000 of the population as a whole at tertiary level. However data given in the Watts Report [Universities Review Committee, 1987] shows that New Zealand's output of graduates [at 272 per 100,000 people] is well below that of many other countries [UK, 280; Australia, 430; Japan, 432; Canada, 616; and the USA, 621]. In addition, data derived from Census material [Bubendorfer, 1987] shows that by comparison with three other small OECD countries, namely Austria, Denmark, and Switzerland, the New Zealand workforce has very low levels of post school formal education and training - particularly at technician, trades and subprofessional levels. These two comparisons suggest strongly that the level of training of the New Zealand workforce, as indicated by the distribution of vocational qualifications within it, is low by OECD standards.

Thus, contrary to the Treasury's counterclaim, the conventional wisdom that the participation rates of young New Zealanders [aged 16 -19] in post compulsory education are low by OECD standards is correct. Participation rates are low both for postcompulsory schooling and for tertiary education and training. In addition the level of formal education and training of the workforce, as indicated by educational and vocational qualifications gained, is also very low when compared with other OECD countries.

What can we say, then, about New Zealanders' participation as 'mature' students? The following table, though not reporting participation rates directly, does give some indication of the greater investment that some countries have in the institutional infrastructure for further education and training.

TABLE 12
AGE DISTRIBUTION OF ENROLMENTS IN HIGHER EDUCATION [%]

		under 20	20-24	25-29	30 +	ALL
Australia	1983 Uni	27.1	31.6	14.9	26.3	100
	1983 nonUni	29.6	25.6	14.0	29.4	100
Denmark	1984 Uni	4.1	42.1	28.4	24.7	100
	1983 nonUni	3.3	63.7	22.8	12.3	100
Sweden	1975 total	15.6	36.5	22.6	24.4	100
USA	1982 total	25.8	38.4	15.1	20.7	100
NZ	1983 total	33.3	42.6	10.1	13.9	100

[Source: OECD, Education and Training for Manpower Development, 1986]

The non New Zealand countries above have higher participation rates in the under 20 age groups, as evidenced by Table 11. Table 12 shows that they also have age participation

distributions which are less heavily skewed in the direction of youth, compared with New Zealand. Thus it can be established that, by comparison with the above countries, the participation rate of New Zealand adults in formal education and training is low.

New Zealand universities have relatively high rates of participation of mature students as Table 13 indicates:

TABLE 13 - NZ UNIVERSITIES - DISTRIBUTION OF STUDENTS BY AGE 1986 [%]

	<25 yrs	25-29 yrs	30+ yrs	All ages
All students	61.9	13.3	24.8	100.0

[Source: Education Statistics of New Zealand, 1987]

Table 12 shows that 24% of students in higher education in New Zealand in 1983 were over 25. Table 13 indicates that over 38% of New Zealand university students are over 25. Thus students at universities are on average older than all tertiary students. The system of provisional open entry for adults to New Zealand universities, and the rapid growth of university distance education, notably through Massey University, are probably responsible for this. The fact that the polytechnic system has no provisional open entry policy and that the Technical Correspondence Institute until recently required that its students had concurrent paid employent in the area of study may explain why there are relatively fewer older students. Thus, the major emphasis in expanding training and further training of adults should be placed on the non university sectors.

SUMMARY

By almost all measures of comparison with other OECD countries New Zealand's rates of participation in formal postcompulsory education and training are low. This is true both for young people undertaking initial training and also for older people pursuing further education and training.

PART THREE - EDUCATION AND TRAINING IN GERMANY, JAPAN, THE US AND THE UK

In this section I plan to contrast current policy, practice and attitudes in New Zealand with those in Germany, Japan, the USA, and the UK. In Germany, Japan, and the USA education and training are regarded as highly important for national economic performance, and participation rates both in initial postcompulsory education and training and in subsequent retraining are high by OECD standards. There are, however, very considerable differences between them in the mode of provision of education and training. The UK and New Zealand share some common characteristics - in both countries participation rates are low and our school systems have a similar history of development, not to mention a similarity of attitudes and culture generally.

GERMANY

In Germany over 90% of students up to the age of 18 are undertaking education and training. Young people under 18 are considered unqualified and have little chance of

finding work. Almost 70% of school leavers enter the "dual system" of apprenticeship which was introduced in 1972. Participation by employers is compulsory and training is offered in more than 400 occupations. Employers pay 80% of the direct costs, the other 20% is paid by Lander [State] governments. Young apprentices have the status of students rather than workers - they get paid basic living allowances, not wages. Apprenticeship is for three years and training is mostly on the job, usually with one day per week attendance at a vocational school. There is no guarantee of a job at the end of the apprenticeship - in fact almost 50% of young workers not only change employers but also occupations at the completion of apprenticeship. Although the system appears vocationally specific it is actually regarded as providing much more than specific vocational training. It is widely accepted that certain transferable key competencies and the non technical outcomes of apprenticeship are sufficient to justify the investment by the employer, trainee, and taxpayer. It is believed that any subsequent adult training is much easier if a person has achieved a VET qualification and that, as expressed by the Deputy Chairman of the Federation of German Trade Unions, "training people beyond immediate economic needs offers much greater future flexibility and the adapatability to make continuous changes in the person's occupational career".

The system involves many self interested organisations and communication between them is vitally important. There is extensive data collection and circulation to interested bodies - there are two national R&D centres for this purpose. The interested bodies themselves often employ researchers as well. In 1980 the gross cost of the dual system was 1.68% of GNP [cf 1.22% of GNP for higher education in polytechs and universities]. The average cost per trainee per year was 4250 pounds (sterling) - this includes the trainees allowance of 1500 pounds. The net cost is reduced by the value of the apprentice input which rises from 858 pounds in year 1 to 2483 pounds in year 3. This is cheaper per trainee than upper secondary education in schools and colleges of further education. Adult VET is mostly paid by employers. In 1982 12% of workers aged 19-65 took part in continuing VET.

Current pressures on the German system are a reflection of structural and technological change. Too many apprenticeships are on offer in traditional skills such as metal working, the food industry and construction and too few in business administration and office automation. Hence there are 31,000 unfilled apprenticeships whilst 47,000 young people seek apprenticeships elsewhere. [The total number is about 700,000 new apprenticeships annually.] Also the three year length of apprenticeships is being criticised for being too long in some trades.

JAPAN

By contrast with Germany, Japan has a predominantly school based system of initial post compulsory education. There is a positive discouragement of specialisation and employers expect and get employees with an unspecialised and theoretical education. There is no strong automatic connection between initial education and eventual career specialisation. Only 5% of 15 year olds enter the labour market. 95% continue with their schooling - the average age of new entrants to the labour market is over 20. There is no concept of finite achievement levels, or the barriers which accompany them.

Vocational training is mostly employer funded, although employee time is often used. Under long term employment contracts training becomes a capital industry in the traditional sense. High emphasis is placed on self development too. The State acts as a safety net, providing training support for small firms and disadvantaged industries and to fill gaps in national provision. It provides inducements to retrain middle aged workers affected by technological change. The Labour Ministry produces vocational

training plans which forecast occupational supply and demand and then creates incentives for achieving those targets. There is a strong emphasis on the quality of information flows and research and development is publicly funded. The government provides information and incentives - subsidies, tax incentives, part payment of capital costs and training instructors.

Japan's system of postcompulsory education and training is closely linked to the special nature of her labour market, and cross country comparisons are difficult because of this. Although the US labour market is very different their education and training systems share some common elements.

UNITED STATES

The US system has been described as a vast "non-system". Initial post compulsory education is in high schools [ages 14-17]. Graduation from high school is regarded as the minimum qualification by almost all employers. About 20% of those continuing beyond high school enter technical and community colleges. Each college has some freedom to decide the balance, content, cost and delivery of its programmes but all courses must have some liberal arts content. Quality is controlled by a system of accreditation of institutions and programmes. The accrediting agencies are voluntary bodies established by institutions, professions or specialised fields. Funding is a mixture of State and private with employers funding customised programmes. State financial aid is available to individual students when needed. Generally the students graduating from college go in to employment but they can go on to higher education - there are various exemption procedures to take account of their college experience.

Alongside technical and community colleges are four year colleges and universities. The private sector provides about 30% of these and student fees are generally higher for private sector courses. Some provide customised training. Undergraduate courses all require passes in general education subjects - professional education, eg law and medicine, is all post graduate. Thus as in Japan early specialisation is discouraged.

By contrast the trade, vocational and business schools do not have general educational aspirations. 85% of these are privately run for profit and they have very close links with employers, some in fact being run by them. There is also a proliferation of correspondence schools running vocational courses. Many large corporate enterprises have their own colleges and universities [the MacDonalds Hamburger University being particularly memorable]. Training is often shared jointly in employer's and employee's time.

Financial aid is available to students mainly in the form of State and Federal grants and guaranteed loans. Federal government provides funds for training in shortage occupations. There is a very strong emphasis on information flows. The Bureau of Labor Market Research produces occupational forecasts which will be referred to again later. Local media take a high interest in training - indicative of national attitudes.

Americans have a high rate of adult participation in education. This is almost entirely associated with the explosive growth of community colleges over the last 20 years. A large proportion of their rolls are adults seeking after hours and part time retraining.

UNITED KINGDOM

In the mid 1980s the UK Manpower Services Commission [MSC] used a comparison of Germany, the US and Japan to help provide direction for changes to the UKs system of post compulsory education and training. The pattern in the UK is similar to that in New Zealand - the senior secondary school is academic and has a norm based referencing system which ensures "failure" by a high proportion of students. A large proportion, about 50% until the mid 80s, entered the labour market at the completion of compulsory schooling.

Employers played little role in formal post compulsory education and training, but generally criticised higher education for not meeting their manpower needs.

The US, Germans and Japanese in quite different ways all recognise competence and consciously include goals such as team work, flexibility and desire to learn in their training programmes. The British and NZ approach is to think of these qualities as "personal" rather than "vocational" and hence not to give them their due emphasis in training and education.

They also recognise the importance of being able to cross occupational boundaries, to use acquired knowledge in changed circumstances and to act in and help manage a system with an understanding of its wider purposes. These general aims are regarded as the most important goals of the system - even in Germany's ostensibly vocationally oriented system.

There is strong emphasis in all three countries on extensive data collection and circulation. This is in contrast to the UK, where there is very little information about the connection between education and training output and an individual's performance in the labour market, no mechanism for planning future needs or forums for interested parties, and also a lack of public information on what happens to people who pursue a particular course of study. The same criticism can be made of New Zealand.

In all three countries employers play an important role in financing and influencing the provision and content of post compulsory training. With the exception of the apprenticeship system, which is now in decline, this is not true for either the UK or New Zealand. Trade unions in the UK and in New Zealand have a structure not conducive to multiskilling and occupational mobility as in Germany and in Japan's uniquely strong internal labour markets. The current move in New Zealand towards industry rather than occupationally based unions should assist here.

The UK response to its initial education and training needs is the Youth Training Scheme [YTS], which was set up in 1983. YTS offered initially one and now two years training for all 16 and 17 year olds who seek it. Its aim is to assist their transition into working life, to provide a base for further training and retraining, and it is particularly aimed at those young people who have not succeeded in the conventional school system.

Training is basically on the job with one day per week in the classroom and at least 20 weeks off the job training within the 2 year period. Managing agents place school leavers with employers, whose participation is voluntary. Sponsoring firms are given a government grant of 160 pounds per month. Trainees are paid an allowance of at least 27 pounds per week in year 1 rising to 35 pounds in year 2. This is sometimes topped up by individual employers.

Participating firms are under no obligation to employ their YTS trainees when they have

completed training although the majority of those who take on full time employment on the completion do stay with their YTS employer.

The occupational structure is based on eleven Occupational Training Families [OTF]. These are grouped around occupations with a common key purpose and each OTF has a range of learning objectives which cover the essential competencies required of all jobs in the family. Mastery of skills is assessed in the work situation on a basis of levels, with the ability to transfer skills and work independently being stressed. Currently 78% of training places are offered in four OTFs - there are criticisms that the system is driven by trainee preferences rather than by employer demand. It is interesting that despite the intention that vocational training be broad based in character, employers see the scheme as predominantly skill specific. Unlike the German system, only about 5% of trainees offered full time employment on the completion of training in 1984 had completed their training with other employers. One wonders how much this is a question of transferability of skill and how much reflects entrenched attitudes.

Over one third of Britain's 16 year olds are signing up with YTS. As in Germany there is some dissatisfaction with the shortage of training places in growth industries and the excess elsewhere. Critics argue that the existing gap between supply and demand for skills needs greater coordination within industries. The second year of training could be industry rather than occupationally based and unconstrained movement of trainees between OTFs and industry based programmes could help reduce any bias in the occupational structure. Training could be linked, where possible, to occupational forecasts.

Other initiatives are aimed at breaking down the academic, competitive bias of UK secondary schools. One is the Technical and Vocational Education Initiative [TVEI]. This aims to stimulate technical education for 14-18 year olds by making the curriculum more relevant and by adopting a "learning by doing" approach. Each project has its own local support group with employer participation. The project links technical education in schools with further polytechnic training, but early indications are that the hoped for increase in numbers taking further technical training is not occurring.

A further and major reform of the school system is the new General Certificate of Secondary Education [GCSE] examination. This will replace the current CSE and O levels examinations which are norm referenced as the New Zealand examination system is. The GCSE will be criterion referenced - ie it will actually test what students know rather than how their performance compares with their peer group. At the same time the A level course structure has been broadened to allow general interest studies to be accepted along with traditional academic courses.

Another change which has been suggested is that university degrees should be more general and of only two years duration. Graduates with general degrees bent on professional or academic careers would then stay on for a further two year post graduate honours degree. This is more like the US system, aimed at developing broad based skills and postponing specialisation as long as possible. Arithmetically, if all those doing three year degrees were to do two year general degrees instead then the money liberated would be sufficient to expand the total number of students by at least 30%.

PART FOUR - TRENDS IN THE DEMAND FOR AND SUPPLY OF LABOUR

A - THE DEMAND FOR LABOUR

As mentioned in the introduction, over the last ten years throughout the OECD economies there has been a relative and, in many cases, an absolute decline in employment in the manufacturing sector. This trend is expected to continue. A growing number and proportion of jobs will come from the services sector - in all advanced economies services already account for more than 50% of employment. This structural change is already underway in New Zealand and is expected to continue as illustrated by the National Sectoral Working Group's projections:

TABLE 14
PROJECTED EMPLOYMENT GROWTH 1982 - 1995

Sector	Increase 1982-90	%	Increase 1990-95	%
Primary	23,400	12.2	12,800	10.8
Manuf, Utilities & Construction	41,700	21.7	9,900	8.3
Services	127,000	66.1	96,300	80.9

[Source: National Sectoral Working Group, 1986]

Thus the services sector is expected to provide 66% of the net new jobs up till 1990 and an astonishing 81% of the net new jobs in the 1990-95 period. Similarly, in the United States the Bureau of Labor Statistics estimates that 70% of new jobs in the US economy to 1995 will be in the services sector [Perswick, 1984]. What are the implications of this shift to the services sector on the demand for education and training?

There has been no aggregate work done in New Zealand* on the skills component of new service sector jobs but work done by the Hudson Institute in the USA [Johnston, W.B., 1987] shows that the average educational level of occupations in the service sector is considerably higher than in other sectors of the economy. When this is further analysed into the actual skill requirements of occupations it is apparent that service sector occupations demand greater average levels of skills than those for the average of all other occupations. Thus continued growth of the services sector in New Zealand is likely to create increased demand for a more highly educated and skilled labour force.

A recent OECD [Changing Work Patterns and the Role of Education and Training, 1986] report is consistent with the Hudson findings. The preliminary report of their Centre for Educational Research and Innovation [CERI] is based on case studies at the individual enterprise level. It examines the impact of the growth of the services sector on changing occupational structures and corresponding skill requirements across several economies.

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* Footnote: Work on specific industries and/or occupations and their skill requirements, eg tourism, information technology, and technician skills has been done by the Vocational Training Council and other groups.

The research results indicate a consistent decline in low skilled routine clerical work, a gradual automation of the more specialised routine functions and increasingly direct contact between producers and users of the services, which demands greater communication skills. Changing skill requirements thus concern not only the capacity to utilise effectively the complex information support systems being developed but also new skills of communication. Another common observation relates to the increasing need for abstract thinking in many service activities. All these developments clearly indicate the need for rising levels of formal general education within the labour force as a basis for further learning which will be needed throughout working life. They also signal the need for increasing emphasis on communication skills both in initial and further training.

The CERI report and the Hudson Institute both look at the likely effect of the increasing proportion of employment in the services sector on the structure of the labour market. Hudson argues that the typical workplace will be smaller. There is increasing contracting out of expert functions, reduced internal promotion and the proportion of personnel belonging to the stable core labour force is declining. The steady recourse to part time work, interim work and flexible working hours also adds to the general picture of the growing diversity and destabilisation of employment conditions.

Anecdotal and more solid evidence suggests that these trends are also occurring in New Zealand. For example, in New Zealand the number of part time workers has shown steady and continuing growth in recent years whilst the number of full time workers has remained close to constant. The recent development of overload executive leasing services, and the observation that large organisations such as the State Services Commission and Databank are closing down their training facilities with a view to contracting them out are further illustrations of these trends in the labour market.

Thus we can expect that in New Zealand, as in many other OECD economies, the relative importance of external labour markets will continue to grow, and unstable employment will increasingly become the domain of highly skilled experts and specialists as well as that of low skilled disadvantaged workers. These trends show considerable variance internationally, but are more pronounced in countries without strong traditions of enterprise based training, eg USA, the United Kingdom, Japan, France, and New Zealand.

These trends in working conditions and organisation have implications for future education and training delivery. The destabilisation and diversification of employment conditions, combined with the raising of required skill levels and increased need for multiskilling may change the current mix of on the job and off the job training. CERI are undertaking further research in this area and plan to examine further the educational implications of changing work patterns and employment conditions.

The Hudson Institute studies show a striking trend towards higher educational requirements among the fastest growing jobs. They estimate that of all the new jobs created over the 1984-2000 period, over half will require some education beyond high school and almost a third will be filled by college graduates. Today only 22% of all occupations in the USA require a college degree.

TABLE 15 - THE EDUCATIONAL REQUIREMENTS OF THE OCCUPATIONS OF THE FUTURE
[HUDSON INSTITUTE PROJECTIONS FOR THE USA 1984-2000]

Years of Schooling	Current Jobs	New Jobs
8 years or less	6%	4%
1-3 years of High School	12%	10%
4 years of High School	40%	35%
1-3 years of College	20%	22%
4 years of College or more	22%	30%

[Source: Johnston,W.B.,1987]

Educational levels are, of course, only a proxy for the skills required for employment. Some would argue that education's main role is as a screening device enabling selection for occupations. They see the rising level of educational qualifications required for entry into various occupations as being a case of credentialism, with no necessary implication of a required higher level of skills. They would view the Hudson projection as simply a case of credential inflation. But the Hudson Institute's analysis goes beyond simply analysing the average level of educational qualifications in different occupations. Their more detailed analysis of the actual language, maths and reasoning skills required for various jobs reinforces the conclusion that the aggregate level of skills required for the US economy will rise substantially between now and the end of the century.

Looked at in aggregate their projections show that when skill requirements in language, reasoning and mathematics are averaged, only 4% of the new jobs can be filled by individuals with the lowest levels of skills, compared to 9% of jobs requiring such low skills today. At the other end of the scale, 41% of the new jobs will require skills ranked in one of the top three categories, compared with only 24% that require such proficiency at present.

TABLE 16 - A SKILLS ANALYSIS OF THE FASTEST GROWING OCCUPATIONS
[HUDSON INSTITUTE PROJECTIONS FOR THE USA]

Skill rating	Current Jobs	Fast Growing	Slowly Growing	Declining
Language rating	3.1	3.8	2.7	1.9
Maths rating	2.6	3.1	2.3	1.6
Reasoning rating	3.5	4.2	3.2	2.6
AVERAGE RATING	3.1	3.7	2.7	2.0

[Note: ratings on a 1-6 scale, with 6 being the highest, "language" refers to reading, writing and oral communication skills]
[Source: Johnston, W.B., 1987]

These projections have been made under the assumption that for each occupation the new jobs created will require the same levels of skill and education as those same occupations today. But rapid technological change almost certainly implies that the educational and skill levels for most occupations will actually increase, thus compounding the anticipated demand for more highly skilled and educated labour.

Unfortunately no such analysis is available for New Zealand as no occupational projections are currently produced. However it seems reasonable to conclude that the same kind of trends are likely to occur here. The following table, showing growth of

employment in different occupations over the last ten years, is indicative.

TABLE 17 - PROPORTION OF NZ LABOUR FORCE EMPLOYED BY OCCUPATIONAL GROUP
[Full time labour force, 1971-1986]

Occupation	1971	1976	1981	1986
Professional, technical	12.6	14.5	14.5	14.9
Administrative, managerial	2.6	3.3	3.6	5.5
Clerical	16.3	16.5	16.8	16.9
Sales	10.4	10.0	9.8	9.5
Service	8.0	7.7	8.3	7.9
Agriculture, forestry	11.8	10.6	11.5	11.0
Production, transport	38.3	37.5	35.6	33.5

[Note: The definition of "full time" changed between 1981 and 1986 so the 1986 figures are not strictly comparable.]
[Source: Census National Summary Volumes, 1971-1986]

The table above shows a steadily increasing proportion of professional, administrative and managerial workers in the full time labour force. The proportion of workers in the production, transport, equipment operators and labourers category has shown continuous decline throughout the 1971-86 period. The proportion of workers in sales has shown a small decline, although this has been offset by the rise in part time employees in that same category.

The classification "services" is an occupational and not an industrial one. Services as used in the table includes only personal services. It excludes many workers in service industries, eg most health and education workers, and most services to business. Thus it does not show the rise in employment in service industries which is expected to continue over the next twenty years.

Overall, Table 16 rather crudely indicates that over the last fifteen years in New Zealand, the proportion of the labour force working in occupations requiring higher levels of education has increased, whilst the proportion in lower skilled occupations has declined. Work such as that done by the Hudson Institute suggests that this trend will continue here, as in the United States.

Technological change, rather than drastically reducing the need for labour, has transformed much of the qualitative demand for labour, as innovations have led to changes in occupation, the organisation of work, and ultimately in the skills required for employment. A qualified workforce is viewed as a prerequisite to realising the full economic advantage of technological innovation. There is evidence to suggest that the new occupations tend to transcend traditional occupational boundaries and place emphasis on the possession of multiple skills.

The need for economies to adjust to structural change and the uncertainty of the future places increasing emphasis on labour market flexibility to facilitate this adjustment. One means of enhancing flexibility is to increase the functional flexibility of workers so that, given the appropriate industrial relations setting, they are able to work in more than one narrowly defined occupational speciality.

B - THE SUPPLY OF LABOUR

The composition of the labour force in New Zealand is expected to change considerably over the next 30 years. The major trends are the aging of the workforce, the continuing increase in the labour force participation rates of women, and the growing proportion of Maori and Pacific Island workers.

TABLE 18 - THE AGE DISTRIBUTION OF THE NZ WORKFORCE [%]

Age	1986	1996	2006	2016
15-19	11.7	8.5	8.2	8.1
20-34	39.7	38.8	31.9	30.5
35-49	31.6	36.3	39.5	37.1
50 +	16.9	16.3	20.3	24.3
All ages	99.9	99.9	99.9	100.0

[Source: 1986 data from 1986 Census National Summary Tables, remaining data from Statistics Department 1985 based labour force projections - unpublished tables].

Table 17 illustrates the decline in the importance of new entrants to the labour market which will occur in the next few years. The decline in the proportion of workers in the 20-34 age group occurs about a decade later with a sharp drop in the 1996-2006 period. As demonstrated earlier, [Table 10, p. 16], the people most likely to pursue formal post compulsory education and training are those in the 15-19 age group. The participation rates of those over 35 are very low. Table 18 shows that we expect the over 35 group to become an increasing proportion of the workforce - steadily rising from 48.5% in 1986 through to 61.4% in 2016.

The reduced volume of new entrants into the labour force, coupled with continuing or accelerating rates of technological change, imply that further training will have to become much more widespread if New Zealand is to retain or enhance its competitiveness. In order to facilitate this, further training will have to be financially viable and accessible to the potential retrainee. It is well known that older people are less mobile - both geographically and between occupations. Training systems which recognise this will be needed.

The proportion of women in the labour force will continue to grow.

TABLE 19 - WOMEN'S SHARE IN THE LABOUR FORCE [%]

	1985	2000
Male	62.2%	60.6%
Female	37.8%	39.4%

[Note: Uses full time equivalents, 1982 based projections]
[Source: Statistics Department 1982 based Labour Force Projections, unpublished tables]

As shown earlier, women's participation in prime age education and training is is now roughly equal with that of men. Given that women's relative share of the labour force is projected to continue growing, it is important that training provision which facilitates later participation by women is available.

Maori people will become a growing share of the labour force. No labour force projections are available for ethnic groups, but the following age specific Maori and aggregate population projections give an indication of likely trends.

TABLE 20 - THE MAORI SHARE OF POPULATION OF MAJOR WORKING AGE GROUP (15-59)

	1986	1996	2006
% Maori Descent	9.1	10.3	11.3

[Source: Maori projections from Pool and Pole, 1987, NZ population from Statistics Dept 1982 based projections]

Looked at another way, according to the Pool and Pole projections, 25% of the projected increase in working age population will be Maori. More recent data on the number of Maori births indicates that Pool and Pole's projections may be low and thus this 25% should be considered as a minimum.

There are no age projections available for other ethnic groups but given the currently youthful age structure of the Pacific Island population living in New Zealand there is every reason to expect a similar or even greater rise in the Pacific Islanders share of New Zealand's labour force.

As shown earlier, Maori school leavers have far fewer school qualifications and are less likely to pursue tertiary education. The same is true with Pacific Islanders although to a lesser extent. These groups which currently have less education and training are and will continue to be a growing proportion of the workforce. Combining this trend with the trend towards greater skill requirements in most jobs implies that much greater attention will need to be given to ensuring that Maori and other ethnic groups are sufficiently well educated and qualified to participate fully in the changed occupational structure.

The occupations of the future will require a higher level of education and skill development. On current trends the labour force of the future will be increasingly composed of those groups which presently pursue education and training less than the average worker. Raising the participation rates of these groups in further education and training is important not only for equity considerations but also for economic growth.

PART FIVE - IMPLICATIONS FOR NEW ZEALAND

A - THE ROLE OF WORKFORCE PLANNING

It would be convenient if someone had a clear enough understanding of economic and technical trends to come up with precise forecasts of occupational requirements. In practice, rapid change makes precise forecasting impossible but clearly there is point in trying to enhance the flow of information that is available to education and training providers and to individuals sorting out their personal career options.

A first attempt at workforce planning was made in 1977 by the Labour Department. They forecast occupational requirements at 2 digit level on a 5 year basis. These forecasts were generally very inaccurate - the correlation coefficient for actual versus forecasted values for 1981-82 projections is r = 0.36. Workforce planning at economy level was abandoned after this initial attempt. Yet in 1986 the OECD [Employment and Technology] considered occupational forecasting to be better than simple guesses or straight line extrapolations of past trends in occupational growth.

It is of interest to note that whilst workforce planning was abandoned in New Zealand after an initial attempt, the USA and Japan both continue to produce detailed occupational forecasts. The US Bureau of Labor Statistics produces ten year detailed occupational forecasts. The primary statistical tool is an industry occupation matrix (500 occupations x 378 industries). This is combined with a projected occupational structure for each industry which is applied to projected sectoral employment from the Wharton economic model. One third of all industrial sectors are reviewed every year to evaluate the nature of technological innovation and the extent of diffusion and forecasts are adjusted accordingly. Three scenarios are used to produce three sets of projections.

Data on specific occupations together with other information on training requirements, the nature of work and working conditions and earnings are used to produce an Occupational Outlook handbook. This is the single most widely used reference for all those working in the career counselling and guidance areas. National occupational employment data and projections are also used at all levels of government and by others to formulate vocational education and training requirements.

The utility of occupational projections is, of course, a function of their accuracy. One way of measuring the accuracy of occupational projections is to compare them with the projections which would have been obtained by linear extrapolation of past trends. Evaluation of the Bureau of Labor Statistics 1980 projections [Carey and Kasunic, 1982] indicates that the average absolute error, weighted by employment, for the levels of employment in minor occupational groups was 14.1%. By comparison, a simple linear regression for the same period gives a similarly measured error of 15.1%.

Such comparison obviously does not advance the case for devoting resources to occupational projections but Carey and Kasunic comment that they expect an improvement in the quality of future Bureau projections. This is because the previous data source for the industry occupation matrix was Census data and since the US Censuses are 10 years apart this was a major source of error. Projections are now based on industry/occupation data from a survey of occupation and employment which runs on a three year cycle.

In the view of the OECD experts [Employment and Technology,1986] unpredictable events sharply limit the extent to which forecasting might be improved. Although technological change is not a major source of error in forecasting employment by occupation, many other factors are capable of producing dramatic dislocations and are very unpredictable. Historically such factors include the oil shocks, changes in tax laws, rises in interest rates and inflation. However they see the preparation of scenarios each incorporating a few possible contingencies as the best way of dealing with these difficulties. They suggest that the best policy responses are those which facilitate mobility of workers between occupations and industries and those which further support investment in human resources, particularly the development of broadly applicable or multiple skills in response to the uncertainty about what particular skill requirements may be.

One of the problems with occupational forecasting is that occupational mobility is high. In practice over a period of years most people either change their jobs or the work they do in their job. In addition, as outlined in Part 2, both the rate of change in the content of work within occupations and mobility between occupations is expected to increase over the next twenty years. No research has been done on occupational mobility in New Zealand - such research would give us a clearer picture of the functioning of our labour market. It would be useful to identify those occupations where mobility both in and out is low - and thus to enable planning of needs for labour in those areas, and to identify ways of enhancing mobility by alternative training schemes, changing entry criteria, etc.

It is interesting to note that even in Germany, which has a vocationally based training system, almost a half of apprentices find employment after training not merely outside the firm in which they trained but in a different trade. Even in an industry based training system, where training might be expected to be more specific and skills less transferable, initial training is regarded as widely applicable among different occupations. From a labour market perspective, education and training programmes for the future should be judged in terms of how well they endow participants with the capacity to contribute to a sequence of jobs and to continued learning. The German experience suggests that both vocational or generally oriented initial training can do this.

B - INITIAL POST COMPULSORY EDUCATION AND TRAINING

As shown in Part Two New Zealanders' participation in initial post compulsory education is low by international standards. Given the likely trends in the demand and supply of educated labour as outlined in Part Four, this position is likely to be exacerbated over time. There is an urgent need to remedy this situation, especially given the present situation where unemployment rates, particularly amongst young people, are high.

Comparison with Germany, Japan, the US and the UK has shown wide variation in the mode of provision of initial post compulsory education and training. At one extreme is Germany with a predominantly vocational model - at the other is Japan where education is school based and employers expect and get employees with an unspecialised theoretical education. The US is a somewhat more mixed system - links with industry are stronger, yet early specialisation is discouraged and study of the liberal arts and general subjects is often mandatory.

Despite these variations all three countries place heavy emphasis on training beyond immediate economic needs. Flexibility and the ability to transfer skills and to undergo successful further training are seen as very important outcomes. Given the likelihood of accelerating technological change these outcomes will be of even greater importance in the future.

There is no one way to achieve them. The best way for each country is dependent on its own unique cultural and institutional environment. In New Zealand our formal initial post compulsory education and training is delivered primarily by the senior levels of secondary schools, technical institutes, universities, apprenticeships and recently also by Access. Participation rates could be increased in any or all of these modes, and new models could also be established.

SECONDARY SCHOOLS

As shown in Table 2 [p 7], the proportion of 15 year olds staying on at school has increased over the last decade. However the proportion of 16, 17 and 18 year olds has remained unchanged over the same period.

Over the same period requirements for entry to Forms 6 and 7 have been relaxed and the proportion of students reaching these levels has steadily increased [Table 1, p6]. The senior school curriculum has traditionally catered for those going on to University. At Form 6 level, the removal of the University Entrance exam in 1985 and the elevation of Sixth Form Certificate to sole sixth form qualification has considerably broadened the curriculum for most sixth formers. This move has enhanced the school's ability to cater for an increasingly diverse Form 6 student group.

However, as Table 1 shows, retention rates have increased for Forms 5 and 7 as well as Form 6. There has not yet been a parallel movement in the curriculum and examination systems for these levels. The number of regional certificates, transition courses, etc at Form 5 level is indicative of the extent to which School Certificate courses do not meet the needs of the Form 5 student group.

At Form 7 level the curriculum is still excessively dominated by University bursary prescriptions amd courses. Many schools are developing alternative Form 7 courses but these will have second class status whilst the Bursaries exam exists in its present form.

The CERI and Hudson Institute studies [p25-27] indicate the need for rising levels of formal general education and for increasing demands for communication skills in the workforce. The expected increasing rate of technological change places emphasis on adaptability and multiskilling and a broadly based initial education is the best springboard for achieving this. These projections and trends provide a strong case for the extension of the common core curriculum through to Form 5.

The Form 5 national examination, School Certificate, is programmed to deliver poor grades to many of the candidates. Subsequent Sixth Form Certificate grades are normative too. This produces a situation where 34% of all students leave with no school qualification, thus labelled as failures, and seems unlikely to engender in them positive attitudes towards school and other educational institutions.

School credentials will always play a screening role, sorting and selecting for occupations, but nevertheless an emphasis on recording competencies and a broadening of the curriculum to include more general and vocational pursuits, recognising the diversity of human talent, will allow greater numbers to succeed and instil in them the desire to continue their development.

The current Form 5 school credentials are heavily used by employers - particularly the English and Maths grades. In today's labour market conditions employers often use these grades to sift through large numbers of applicants. However there is often a mismatch between academic and other skills - personal, creative, physical, social - thus many competent young people are denied access to jobs or further training on the basis of School Certificate grades. Many schools have developed Leavers Profiles which give a more complete picture of a young person's strengths. The development of a National Leaving Profile for all school leavers would provide much better information about the capacity of each young person - this would be valuable to potential employers, higher educational institutions and to young people themselves.

If the common core curriculum was extended to Form 5 and a National Leaving Profile was adopted the School Certificate examination could be removed. This would encourage students to stay at school until they have got their Sixth Form Certificate - any early leavers would be catered for by the Leaving Profile.

The idea of "senior high" schools [often called "sixth form colleges"] of post compulsory education where academic, vocational and general education could be offered in a more adult environment may encourage more positive attitudes and greater participation by young adults. Pilot schemes in Queensland, Australia indicate that this is the case.* Freed from the custodial role required with the younger age group these institutions would be able to be more flexible and innovative with hours, staffing, teaching method and contact with industry. Such organisations may also be more likely to attract those seeking further training or second chance education, as do community colleges in the US.

Although there is strong evidence for emphasis on the basic general skills of literacy, numeracy and communications, the links between school and other educational institutions need to be strengthened. Transition programmes [including in school transition, work experience, work exploration and LINK] are increasing the contact between school, polytech and work.

However in 1987 less than 5% of all senior secondary school students in the Central region participated in LINK. Of those who did, 90% found Link useful in helping them think about their future. Approximately 35% of those same students participated in work exploration - about 75% of them found it useful in helping them to think about their future [data from Project FAST, Education Department, 1987]. Thus, there is room for further movement in this direction, particularly at Form 5 and earlier levels, before too much subject specialisation occurs.

Students, teachers and educational institutions would benefit from a more flexible policy whereby non teachers could teach and teachers could work in other jobs at periods of their working lives. Schemes aiming at greater flexibility of this kind are being piloted in the United States and the United Kingdom. Such flexibility would require alternative teacher training modes, short term contracts and union agreement. A move in this direction would help to reduce the frequent criticism of the isolation of school from the world of work.

Work in the United States on career guidance and counselling in their secondary schools [Garner et al, 1982], indicates that school guidance counsellors have a low status in most US schools and that they spend most of their time responding to specific requests rather than implementing more comprehensive career guidance across the school. They argue that informing students about careers must be done across the curriculum. In the New Zealand context programmes such as Transition, Link and the Form 4 Social Studies Careers Unit are doing this. It is important that such initiatives are further developed and that they are made available to all students rather than to particular groups such as those expected to leave school early.

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* Footnote: Source - D. Hood, Department of Education, personal communication

A YOUTH TRAINING SCHEME?

Is our secondary school system able to adapt with sufficient speed to ensure effective education with higher rates of participation? There has been some discussion of raising the school leaving age - Education Department estimates $580m initial costs plus $110m/annum to raise the school leaving age to 18. However there seems little point in doing this unless schools can cater for the needs of what would be a much more diverse group of senior students.

Australia and the UK, also aiming to increase their participation rates in post compulsory education, have secondary school systems similar to New Zealands. Whilst some UK initiatives have focussed on increasing retention rates in secondary schools, the major one, the Youth Training Scheme, has been set outside of the school system. It is similar to the West German dual system - but is aimed specifically at those young people for whom the conventional school system has been demotivating.

Australia has established the Australian Traineeship System [ATS] which intends to provide at least 12 months on and off the job training for those with no other organised initial training or apprenticeship. Unions and employers negotiate trainee allowances and state subsidies are paid to employers and training providers. The West German system costs less per head per annum than their secondary school system.

Like the United Kingdom and Australia, New Zealand has a secondary school system still struggling to break free from its competitive and academic tradition. Australia and the United Kingdom have implemented measures to broaden the post compulsory sector of secondary schooling. However, in their drive to increase post compulsory participation rates, rather than further raising the school leaving age, both countries have set up new job based training systems for early school leavers who would not previously have undertaken further education and training.

Consideration should be given to establishing some kind of Youth Training Scheme in New Zealand. It would suit those students who are currently unsuccessful at and disenchanted with secondary school. It would be vocational and linked to employer needs and may be economical compared with other training forms.

POLYTECHNICS

The polytechnic system is the main deliverer of trades and middle level [sub degree] vocational skills in New Zealand. As Bubendorfer [1986] points out, when compared with some other small OECD nations, particularly the European ones, our rates of participation in trades and middle level tertiary education are very low. His data, derived from Census material, shows that only 13% of the New Zealand workforce has middle level qualifications, compared with 35% which he estimates as the average for Switzerland, Denmark, and Austria. The corresponding figures for trade training are 11% for New Zealand and 45% which is the Swiss, Danish and Austrian average. By contrast the proportion of the population with professional education is very similar across all four countries, being 15-16%. This data thus suggests that compared with some other small OECD nations New Zealand is underinvesting in trades and middle level education and training.

A November 1987 Education Department survey of fifteen polytechnics in consultation with local industry and community groups indicated demand for an additional 3456 student training places per annum. About 80% of these places were in the Employment Rich area - these are skills at the middle level which will lead to employment. Six

polytechs were not surveyed, so the 3456 figure obviously underestimates the training need.

Data from the polytechnics based on actual enrolment applications indicate that there is a lot of pressure on polytechnic rolls, especially on full time full year courses. This year almost as many prospective new students were turned away [8500] as were accepted [9300]. The following tables list only those courses where there was a significant shortfall in student places.

TABLE 21
APPLICATIONS FOR AND PLACES IN SELECTED POLYTECHNIC COURSES, 1988

Vocational area∘	Students accepted	Eligible# students rejected	Discounted@ eligible students rejected	Estimated additional eligible students*
Agriculture/Horticulture	62	73	58	146
Arts/Crafts [vocational]	529	726	581	104
Business/Management	2416	1633	1306	405
Health/Nursing	1476	1619	1295	274
Scientific	220	74	59	28
Secretarial/Clerical	606	534	427	62
Tourism/Hospitality	401	753	602	170
Trades	611	594	475	424
Other	330	382	306	978
ALL AREAS LISTED ABOVE	6651	6388	5110	2591

[Notes: ∘ - lists only vocational areas where the shortfall of places exceeds 5%, data expressed in full time,full year student equivalents.
- those applicants who did not satisfy the entry requirements are not included
@ - discounted eligible student places allows for students applying for more than one course. A discounting factor was found by consulting eight polytechnics, whose estimates ranged from 5% to 30%, averaging 20%.
* - polytechnics were also asked to estimate what courses could be run if additional resources were available and to estimate their probable enrolment]
Source: Education Department, unpublished paper,1988

Thus the Education Department estimates that in excess of 7500 eligible full time equivalent students would have undertaken full year polytechnic training courses in 1988 if the training places had been available. Alongside this an estimated 4000 full time equivalent training places were made available under the ACCESS training scheme in 1987, and, according to June 1987 Labour Department figures, some 8500 young people [15-19 year olds, including school leavers] had been unemployed for more than 13 weeks.

Greater public expenditure on polytech education would provide skills at the middle levels, where as the polytechnic survey shows, they are most needed. By removing the equivalent of an additional 7500 mostly young people from the labour market we would expect there to be more [although fewer than 7500] jobs available for those who are currently unemployed or on Access training. Unemployed people and Access trainees currently receive greater direct public funding than polytechnic students, so that one would expect an expansion of polytechnic places may be, both in the short term as well as the long term, a better use of public funds.

Full time rolls at polytechnics increased quite rapidly during the early 1970's but after 1978 this rate of increase substantially declined:

TABLE 22
FULL TIME STUDENTS AT NZ POLYTECHNICS 1969-1986

Year	Number of full time students	Annual % increase from previous listed year
1969	1536	
1971	2236	22.8
1974	3353	16.7
1976	4300	28.2
1978	5760	16.9
1980	6842	9.3
1982	7330	7.1
1984	8195	5.9
1986	9429	7.5

Source: Education Statistics, 1970-87

The annual rate of increases of full time places was over 20% per annum for the 1969-1976 period. If expansion had continued at this rate through to 1986 then instead of 9,429 places there would have been about 15,500 places in 1986, a figure which is much more in line with current demand for places.

The Polytechnic and, to a lesser extent, University systems are frequently criticised for being unresponsive to the needs of industry. There is widespread agreement that the very centralised funding arrangement for polytechnics needs fundamental change. As far as possible managerial power should be centred in each individual institution, rather than with a central agency. A student driven funding system, where all or part of a training providers income is based on student enrolments, would ensure providers were more responsive to student demand. More flexibility in relation to salary scales and lengths of staffing appointments would also enable education and training providers to adapt more quickly to changes in demand.

Currently there is also widespread dissatisfaction with the certification and validation systems. A wide range of bodies under the umbrellas of the Trade Certification Board and the Advanced Authority of Vocational Awards are involved in developing curricula. This system is cumbersome and makes it difficult for some groups to gain access to training and for training providers to respond quickly to new demands.

The Government has already indicated its intention to develop a single National Validation Authority but the role of such an authority is unclear. Ideally such an authority would monitor outcomes only, thus leaving training providers to sort out the process of training. Training could thus be more easily geared to the needs of its clients. There is a danger that individual students would be "ripped off" by undergoing unsatisfactory non returnable training. Maybe this could be avoided if some provider funding was held back until the successful gaining of credentials by trainees, in a similar way to Access payments now.

Some of the points made in the next section on retraining also apply to initial training, particularly the points on more coordinated modular systems, common core training, increased exit and entry points and alternative modes of provision.

C - FACILITATING FURTHER TRAINING

There are many areas where training systems could be changed in order to facilitate greater participation by adults in training and retraining.

A more coordinated modular system with initial common core training (as in the British idea of "occupational training families") would enable adults to build on past training when selecting new training options. This structure also has advantages for young people who may be unsure of exactly which option to pursue by delaying choice until greater knowledge is acquired. The Polytechnic Foundation courses, which provide common core preapprenticeship training are an example of this idea in practice.

An increase in the number of recognised entry and exit points from training courses would allow greater flexibility (for example, the existing arrangement of NZCE graduates to enter 2nd professional year at University engineering schools).

Alternative entry criteria which recognise the past experience of an aspiring trainee would assist interoccupational mobility (for example, the University provisional entry system).

As argued in the section with secondary schooling, there needs to be a move away from credentials which are normative or based on time serving towards a competency based system. What is important is what a person can do, and a credential based on years of experience or on ranking within a certain student group may be a poor proxy for competence. Certification should signify a certain level of competence, not conformance to a prescribed programme of preparation.

Bridging courses which enable prospective trainees to pick up particular skills would facilitate takeup of retraining. Greater use could be made of these. These could make use of tapes and other prepared material not requiring extra direct teaching hours.

Provision of alternative modes of training would allow greater participation of immobile and otherwise committed prospective trainees. Timetabling and location need to fit in with other commitments eg full time employment, childcare responsibilities, geographical immobility. More courses need to be made available on part time, weekend, or correspondence bases. Satellite centres need to be made available to assist those who are geographically immobile. The explosion of students enrolled extramurally through Massey University is indicative of the demand in this area, but tends to concentrate on the more general, less vocational content areas and needs to be more balanced. Coordination with other institutions, eg polytechnics may enable some courses requiring specialised facilities to be offered as distance subjects, eg physics. The provision of satellite centres, as in the 1988 offering of Victoria University courses in Maori language in Porirua through Parumoana is an innovative example of this. There are equity as well as efficiency considerations here.

Current participation by Maori people in post secondary education is limited by the low rates of retention of Maori students at Forms 6 and 7 level. Thus in order to increase Maori participation in post secondary education, policies which assist adult entry into courses are especially important in the short term. Bridging courses designed explicitly for this purpose, developing university skills and bridging the cultural gap, more liaison work by the universities and polytechs, and the use of satellite centres, as mentioned in the previous paragraph, would help achieve this aim.

As discussed in the previous section, in order to retain flexibility in a proliferation of training modes and schemes there should be a National Validation Authority under

whose authority training credentials are recognised. Care needs to be taken that the system created is flexible and able to respond to local needs speedily but this needs to be balanced by individual and national interest in the portability of certification.

In France and the Nordic countries employees have the right to unpaid educational leave, even when the training may not be of direct relevance for the trainee's current job. This would encourage participation in further training.

D - FUNDING

The cost of increasing participation rates to the extent required is unlikely to be met by efficiency gains from reform of the current system of provision. Thus increasing participation rates will require greater funding. Who provides such extra funding is open to debate - and is closely related to the question of who benefits. Individual trainees, industry and the taxpayer all benefit to some extent from post compulsory education and training, although the relative sizes of these benefits is close to impossible to determine.

A common theme in the funding debate is expressed by the Treasury [1987] on page 40: "Government subsidy of individuals' educational costs will increase the number of individuals or their agents who find the benefits to them from education greatly exceed the costs. Such individuals will in consequence tend to pursue more education than they would otherwise have done."

As shown in Part One, New Zealanders' participation rates in post compulsory education and training are low by OECD standards. However, according to the Treasury analysis, the relatively high levels of government subsidy in New Zealand have encouraged individuals to pursue education more than they would otherwise have done. Reduction of government subsidies, as advocated by Treasury, would depress participation rates still further. Given our already low participation rates and considering likely future trends as outlined in Part Four, reduction of government subsidies seems unwise.

The new system of income support for full time students and the young unemployed has been shaped by the following four considerations. The first is the age to which parents should be responsible for the financial support of their children. The second is that support needs to be better targeted to those who most need it. The third is that by paying a young unemployed person no more than she would get at school or in tertiary training that young person has more incentive to continue with education and training than under the previous system. The fourth is that, as argued in this paper, extended schooling is viewed alongside other forms of education and training as one means of increasing the skills of the potential workforce. I would like to discuss these in greater detail.

First, to what extent should parents be responsible for the financial support of their children's post compulsory education? In Germany parents are considered to be responsible for the financial support of their children up until 18 years of age. Dual apprenticeship trainees are paid an 'allowance', which is more at the level of a bursary than a wage. In the UK, YTS trainees are similarly paid an allowance, which is sometimes topped up by individual employers. The Royal Commission on Social Policy [Royal Commission, 1988] takes the view that the large majority of young people under 18 years of age can still reasonably count on a degree of parental support. The recently announced reform of income support for young people takes an even stronger line, implying that most young people, to the extent that they cannot support themselves, should be supported by their parents until they are 18. Thus the new

package provides income support only to those under 18 year olds with low parental income. The new system thus extends the period of parental responsibility for income support of their offspring from 16 to 18 years.

Second, in the new income support package payments are targeted to those whose parents have less ability to pay, and are stepped by age. Participation rates may be increased by targeting those most likely not to continue their training because of financial need. However, in the case of many groups, eg Maori people, targeting of funding alone is likely to be insufficient to ensure greater participation.

The use of parental income as a means of assessing parental ability to support a young person in further education is rather simplistic. The number of persons to be supported by the parental income needs to be taken into account and some kind of equivalent income used for assessing parental ability to pay.

The increase in government support for those over 20 is welcomed, particularly in the light of trends in the age structure of the workforce as discussed in Part Four.

Thirdly, the new system of income support for students and the young unemployed aims at encouraging students to train rather than to stay on the dole. Currently, a 16 year old on the unemployment benefit receives $99/week, a trainee on Access $109/week, a polytechnic or university or teachers college student often receives only $41/week, and a 16 year old continuing at school usually receives nothing at all. The Minister of Employment and others have argued that this system of funding has discouraged many young people from pursuing further education and training. The new system standardises training allowances by age and parental means rather than by the course being undertaken.

The previous discussion of polytechnic education raises the question of whether the current system of youth allowances is the most significant factor in discouraging young New Zealanders from pursuing further education and training. The number of applicants for polytechnic courses suggests that many young New Zealanders wish to further their education and training at current levels of student support, but are unable to do this because places are simply not available. University places are more freely available [although some courses have very restricted and competitive entry] but are not a suitable substitute for polytechnic training for many prospective students. The new standardised student allowances may be appropriate, but such signals alone will be ineffective unless sufficient training places are available.

Fourth, income support to students from low income families has been extended to those remaining at secondary school. This is consistent with the Royal Commission on Social Policy recommendations that in New Zealand youth allowances should be available to all 16 and 17 year olds [and possibly all 15 year olds] who are engaged in education and training programmes, including those who remain at secondary school. It is also consistent with the arguments advanced in this paper. As discussed earlier, extended schooling is viewed alongside other forms of education and training, as one means of increasing the skills of the workforce. Thus students who elect to stay at school should receive youth allowances in exactly the same way as those who opt to continue their education elsewhere. This is particularly the case in the present situation where in many cases other suitable education and training, eg polytechnic or apprenticeship training, is not available for all those who seek it.

The New Zealand reform of financial support for students and the young unemployed is broadly similar to that introduced in Australia. There from 1.1.88 all 16 and 17 year olds in secondary or tertiary education or on the dole receive the same amount. This

allowance is subject to income testing of parents of dependent children in full time secondary or tertiary education, but apparently not those on the dole.

In contrast to many other countries employers do not directly fund formal training in New Zealand. The German dual system indicates the German employer's commitment to training. The German employers' funding is admittedly compulsory, but in reality it is based on a very high degree of consensus. In France companies employing more than ten people must spend at least 1.1% of their payroll on training. The UK adoption of the Youth Training Scheme is an indication of the expectation that employer financial input into training will increase. Although employer contribution there is currently voluntary, it is anticipated that this may be made compulsory sometime in the future. The US has a tradition of large corporate institutions running corporate campuses of their own - they tend to be non profit institutions and attract a fair proportion of students from outside their founding firms. Supplementary funding of the public system occurs too - the financing of University chairs is a good example.

New Zealand business contribution to the funding of formal post compulsory education and training is, by comparison, very small. Adoption of a YTS type system would encourage employer contribution. A system of student support which funds equally students attending officially recognised privately provided education and training courses would encourage employer groups to make a greater financial input too.

E - IMPROVING THE QUALITY OF INFORMATION FLOWS

The provision of suitable training opportunities is only useful to the extent that these are known to potential trainees. A recent OECD report described the proliferation of training opportunities as a "jungle". The quality of the information flows is critical to the functioning of any system.

Information about training courses and employment prospects for different occupations need to be made available to parents, teachers, career counselling professionals and to the existing and potential workforce. Providing good information to all potential users could be done through a national database on occupational prospects, training opportunities, and other relevant data. As far back as 1980 25% of all US schools used computerised career information resources and this usage was expected to increase rapidly [Garner, 1982]. Careers and training databases were also available in all US libraries. Garner also notes that computerised systems are far more comprehensive than publications and contain far more regional and local data.

Despite the usefulness of computerised data, the single most widely used reference on career information in the US is the Occupational Outlook Handbook produced by the Bureau of Labor Statistics in conjunction with its occupational forecasting programme. This includes qualitative descriptions of occupations and a sentence expressing the expected growth of that occupation over the next few years [terms used: very rapid growth, rapid growth, moderate growth, slow growth, little or no growth, etc]. Carey and Kasunic [1982] evaluated the accuracy of these descriptors for the 1980 projections and established that only about 3% of the descriptors used were misleading. The handbook thus is a well used and informative contributor to career information and counselling resources. No such material is available in New Zealand.

I note that the New Zealand Council for Educational Research [NZCER], is currently compiling a directory of computer courses available in New Zealand. Also the first New Zealand Directory of Training has been recently published. The Central Institute of Technology has recently established a Videotex Database, giving their course details,

dates and costs. A national computerised database, using Videotex or some similarly widely accessible medium, could provide information on training required for all occupations and details of courses currently available. This would require the cooperation of a number of agencies and would require central coordination, perhaps by the Department of Labour. It could be easily updated - such up to date and comprehensive material would be a considerable asset to those in the business of seeking or providing training, and to those providing career guidance for others.

Given the decline in the school age population, Garner argues that it can be expected that schools might collaborate with the private sector and other educational institutions in servicing the need for greater career information and guidance. This could be done in New Zealand too.

F - THE ROLE OF COMPULSORY SCHOOLING

The focus of this paper is on post compulsory education - nevertheless the trends described above have implications for all schooling. It is recognised that schools have many functions and that only some of these are economic - nevertheless there is a great deal of overlap between these and the noneconomic functions of schooling. Whilst there is a danger that schools have too many demands made on them from different groups in society the following considerations are important for New Zealand's economic future.

It has been argued that New Zealanders' participation in post compulsory education is too low and needs to be raised considerably, both for prime age and for mature learners. In order to achieve this it is important that initial schooling creates the attitudes, abilities and confidence in young people which will encourage further and later participation. By the end of compulsory education all students should have developed the desire to take responsibility for their own future learning.

The Hudson analysis shows that the fastest growing occupations of the future require greater language [communications rather than foreign languages], mathematics, and reasoning skills than today's average job. Also, technological change is likely to increase the demand for basic skills over most existing occupations as well. This is a compelling reason for extra effort to improve the schools' performance in teaching the basic three 'r's. Monitoring of performances in selected school subjects would help detect emerging weaknesses. Such national assessment is done in the US and the UK, and according to the NZCER should be done here. Measures to improve the accountability of schools are seen in many OECD countries as a means of achieving this, with greater parental choice and less rigid control of the curriculum being tried in the USA, with some preliminary evidence of positive results.

Given the rapid development and improved accessibility of data banks plus the high rate at which knowledge becomes obsolete, the cumulation of factual knowledge whilst at school is becoming a nonsense. For example, The Economist, December 1986, estimates that fully a half of the professional knowledge of an electronics engineer graduating in 1987 will be obsolete by 1992. Learning how to learn is much more important. There will be an increasing demand for those with broad generic skills and the capacity for analytical abstract thinking - research is needed on the best way to foster their development.

The growth of the services sector and the corresponding increasing importance of efficient contacts between these service industries and their clients means that communication skills will become increasingly important. This highlights the need for continued emphasis on written communication skills and more emphasis on listening,

speaking and other non written forms of communication.

The revolution in information technology implies that all students need basic computer literacy.

There is increasing doubt as to the capacity of the current school system to cater for the needs of the Maori people. As shown earlier the current educational system is not equipping most Maori people with the skills needed for work in the workforce of tomorrow. Retention rates for Maori students at Forms 5, 6, and 7 level in secondary schools, although rising, are still very low, and this greatly limits Maori participation in post school education and training.

Arguments for a bicultural system are based on the idea that only by being strong in their Maoridom can Maori people be strong in the Pakeha world. Only an immersion in their own language and culture will enable them to stand tall and have confidence in their own abilities. The kohanga reo system, bilingual state schools with Maori language immersion streams, such as Ruatoki, the three independent Maori schools and the private Maori university, Te Wananga o Raukawa, are all examples of institutions based on this philosophy.

So far there has been no systematic and controlled evaluation of the effect of this kind of education on the educational achievements of Maori children. There is little which can be drawn on from elsewhere, the Basque and French Canadian experiences both being essentially quite different from the Maori one. New Zealand evaluations reported in Benton, 1987, have pointed to improvements in the tone in these schools and to a decrease in truancy, but there is no research evidence on the effect on standards of school achievement, or on proxies which may be reliable indicators of such later achievement. Evidence from such research would assist in the formulation and implementation of much needed more successful modes of Maori schooling than are currently available to most Maori people.

PART SIX - CONCLUSION

This conclusion begins with some general points about the approach of policy makers to the formal post compulsory education and training area. Following this is a personal view of the changes which should be made to New Zealand's existing PCET system.

First, policymakers must view the system of formal post compulsory education and training in a holistic manner. All parts of the system, including post compulsory schooling, must be viewed as complementary and sometimes competing parts of this overall system. The linkages between the parts are crucial. Thus policy advisory functions for post compulsory education and training need to be contained in a single structure.

Second, any analysis of the structure and functioning of formal post compulsory education and training and the role of government must be done alongside a similar analysis of on the job training. From a workforce perspective the two have complementary functions. There is also a considerable degree of interaction and possible overlap between them, eg the apprenticeship system which is primarily on the job with an increasing formal off the job component. In recognition of this inter relationship the Planning Council is undertaking an accompanying study of enterprise training in New Zealand. We hope to make this available later in the year.

This paper has established that New Zealand's participation rates in post compulsory

education and training are low by OECD standards, particularly at the lower and middle skill levels. It also demonstrates trends in the demand for and supply of labour twenty years out which imply that the situation will be exacerbated unless policy changes are made.

The following is a personal view of changes which could be made to improve the post compulsory education and training of New Zealand's workforce. Rather than being prescriptive, it aims to stimulate discussion and debate about the reform of post compulsory education and training.

TO WHAT EXTENT SHOULD PARTICIPATION RATES BE RAISED?

This paper has argued strongly that New Zealanders' participation rates in post compulsory education and training are too low. Any figures of desirable rates are somewhat arbitrary - there are no magic numbers.

As a start we could raise the current participation rate of 15 year olds from 93% to 100%, by raising the school leaving age to 16 years. This would bring us more in to line with other OECD countries.

We could then aim to increase the participation rates of 16 and 17 year olds by 20 -30% at each level, with a longer term aim of introducing an "educational leaving age" of 18 years in about five years time. Such an "educational leaving age" would mean that all young people up to the age of 18 would be required to be undertaking some form of further formal education, at least on a part time basis.

Increasing the participation rates of 15, 16 and 17 year olds would have a spinoff effect for the participation rates of older people. Those people who undertake more initial training are the ones most likely to pursue further training. By giving every young person initial training the participation rates of older people are also likely to rise. By extending income support to some groups of older people who wish to undertake further training the participation rates of these groups will increase further.

REFORM OF NEW ZEALAND'S PCET SYSTEM?

Comparison with Germany, Japan, the US and the UK has shown wide variation in the mode of provision of initial post compulsory education and training. There are many different and successful models which New Zealand can use to model its own system. Here is one view:

Secondary schools would play an increased role. The school leaving age would be raised [not before 1990] to 16 years, with an associated continued expansion of funding for Transition programmes to ensure that schools can provide a worthwhile learning experience to their increased client group. School Certificate would be abolished and a broader, more general curriculum would be extended to Form 5. It is predicted that with no leaving certificate at Form 5 many more students would complete a fourth year at secondary school, thus raising the participation rates of 16 and 17 year olds in secondary schooling. National Leaving profiles would be introduced. The Form 7 curriculum and examination prescription would be modified to better suit the needs of all Form 7 students.

A Youth Training scheme would be introduced. Once established this would offer all 16 and 17 year olds who wanted it job related training for two years. Training would be primarily on the job, with at least one day per week [or its equivalent] in a formal learning situation. Employer participation would be voluntary and employers would be given a government grant for taking on trainees. Trainees would be paid an allowance, perhaps akin to the standard tertiary allowance, with employers topping this up. Neither employer nor trainee participation would be compulsory. Initially the structure would be established in pilot form, as the Australian Traineeship System was. Training could be based around occupational training families, or alternatively around industry groups, perhaps using the already established Industry Training Boards. Either way the emphasis would be on developing broad based skills. Training could be provided by groups competing on a contract basis in a manner similar to Access. A certification system, with a modular structure, and with emphasis on assessment of competencies would be administered by a National Validation Authority which would also be responsible for certification of existing occupational training.

The polytechnic system would be expanded so that it more nearly meets the demand for its courses. This would require approximately 60% growth in polytechnic numbers which would obviously take several years to accomplish effectively.

Access and MAccess would continue, but given the establishment of a YTS scheme it is expected that the demand for these courses would drop. Access and MAccess courses would be brought into the mainstream system of certification as far as possible.

The flow of information would be enhanced by establishment of a national database which contains all available information on occupations, expected occupational trends, and training courses available. This would be available to schools, career counsellors and to individuals, perhaps via their libraries.

The education and training of Maori people has been covered only briefly in this paper and will be the major focus of subsequent work.

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