

1 INTRODUCTION

This volume of the Papua New Guinea Education Plan should be read in conjunction with both *Volume A* and the *PNG/AusAID/ADB Education Resources Study (1995)*. *Volume A* examines the reasons behind the restructuring of the National Education System and outlines the plans and programs that need to be implemented in order to achieve that restructuring. This Volume looks in rather more depth at the issues involved and the recent historical background of education in the country.

While it is common in national plans to refer to national averages, there is also in Papua New Guinea enormous differences between provinces. This is noted on a number of occasions throughout the text and consequently Section 11 at the end of the volume aims to give a thumbnail sketch and the educational status of each province.

1.1 Overview

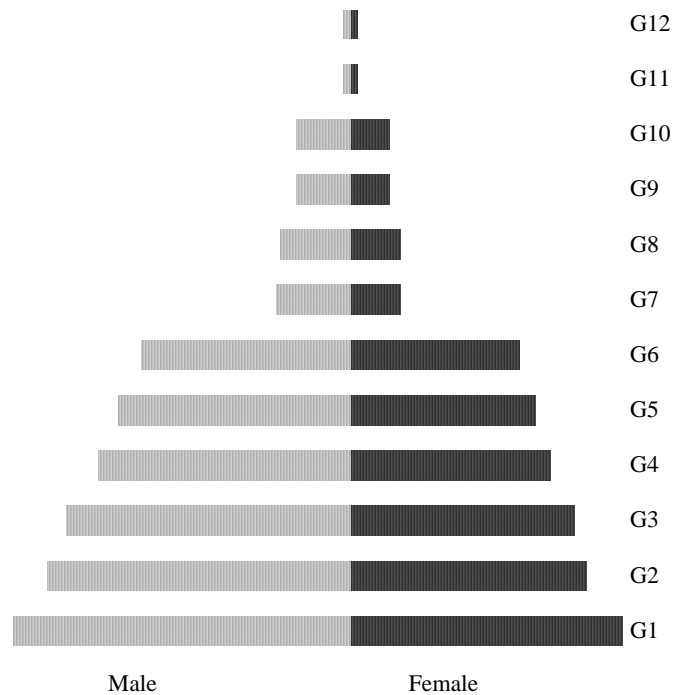
In 1990 and 1991, the Department of Education, with assistance from UNDP and UNESCO, conducted an Education Sector Review. The primary recommendation of the Sector Review called for a basic reform of the education system. This recommendation was based upon an analysis of major issues, and an identification of basic weaknesses in the system. The reform involves the restructuring of the formal education system from the pre primary level through to the upper secondary level. The reform is designed to directly address most of the systemic weaknesses and endemic problem areas identified in the Sector Review.

Support for the reform has been strong at all levels since the education sector review was endorsed by the Council of Education Ministers at its conference at Madang in 1991. At the National Executive Council (NEC) level the Department was tasked to draw up plans for the implementation of the reforms. A National Education Reform Task Force was established in 1991 to consider ways to pilot the program in two provinces, and this commenced in 1993. Strategic plans for the long-term implementation of the reform have been addressed in the form of a major Resource Study. The outcome of this Resource Study has dictated to a large extent the clarification of priorities, and the coordination of programs with major non-government organisations, including the mobilisation and appropriation of resources.

The existing structure (Primary—grades 1 to 6; Lower Secondary—grades 7 to 10; and Upper Secondary—grades 11 and 12) has been characterised by high attrition rates at the primary level and a serious access problem at the secondary level. The two major bottlenecks are at Grade 7 and Grade 11.

These two bottlenecks together result in the pyramid shown in Figure 1 for the 1984 Grade 1 cohort—a broad base of primary school enrolments through to a small number of students at the top.

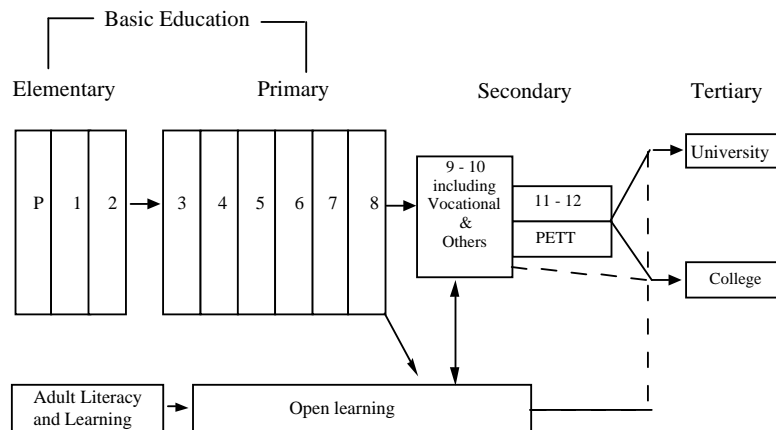
Figure 1 Grade 1 to Grade 12 progression, 1984 to 1995



The pyramid illustrates the gradual drop off in numbers from Grade 1 through to Grade 6 and then the very large drop between Grades 6 and 7. This severe contraction in numbers was brought about by the inability of the old system to expand post primary places rapidly enough to accommodate the increasing primary output. There is a similar, although lesser, drop between grades 7 to 10 during high school and then another big drop at the other major transition point of the system—Grade 10 to 11.

The restructure suggests a 3 - 6 - 2 model depicted in Figure 2. This includes nine years of basic education – both elementary and primary – followed by four years of secondary schooling.

Figure 2 The reform structure



- Notes:
1. **Preparatory:** Preparatory class with initial literacy and general education in the vernacular.
 2. **Vocational:** Two years of lower secondary education with a vocational skills bias.
 3. **Other:** A wide range of 'permitted' institutions which offer two or more years of secondary education, with a bias determined by the needs and opportunities of the areas which they serve.

4. **Grades 11-12:** Upper secondary education or Matriculation will develop particular curriculum biases, for example, academic, agriculture, technical, commercial and so on. Figure 2 provides for Grades 11 and 12 in separate institutions, as at present, or added on to existing provincial high schools.
5. **PETT:** Pre-Employment Technical Training courses, which are for two years post-Grade 10, and located in technical colleges.
6. **College:** Covers the more than sixty non-university 'tertiary' institutions which currently take mainly Grade 10 leavers, but who are intending to raise their entry level to Grade 12 as the pool of Grade 12 leavers increases.
7. **Open Learning:** College of Distance Education, Institute of Distance and Continuing Education and other distance education providers.

At the first level, village or settlement-based elementary schools would be formalised. Annual intakes would be possible allowing for the reduction of staggered intakes. This, in time, should solve the problem of overage entry. Enrolment at the prep level will begin at six years of age. These schools would build on existing Tok Ples Pre Skul (TPPS) initiatives and provide a preparatory year's education (Elementary Prep or EP) followed by Grades 1 and 2, (often referred to as Elementary 1 or E1 and Elementary 2 or E2 in order to distinguish them from Grades 1 and 2 in the community schools). The language of instruction in elementary schools will be a known language allowing for acquisition of literacy in the language which the children speak.

Prep curricula would emphasise initial literacy, numeracy, ethics, morality, and cultural bonding. To make the curriculum more relevant, expand enrolments, and help improve retention in elementary schools; EP, E1 and E2 will comprise a new integrated curriculum based on the child's own culture and community. In many schools, teaching will be done by one teacher using multi-grade teaching methods. The transition to English will begin in the third year. A new more relevant, integrated activity-based curriculum will be adopted, and will use locally developed materials. An initial literacy kit of eighteen stories will be provided. Classes will be of four hours duration each day. Elementary teachers will be trained through a program consisting of three phases and internships. Teachers will receive a salary commensurate with training and hours of duty. A system of supervision for elementary school teachers is being developed.

The elementary schools will act as feeder schools for primary schools. The introduction of elementary schools in the villages will free classroom space and other facilities within the primary schools. This will facilitate the relocation of Grade 7 and 8 classes from the high schools. There will be no great increase in either the enrolments or number of teachers in the primary schools over the plan period. Six years of primary education will be provided through to Grade 8. All children will be expected to continue with their education until Grade 8. It is hoped that this will help overcome the problem of the loss of students, particularly girls, from the system after Grade 6. To improve the quality and relevancy of education, the primary curriculum will become more subject-specific, and a strong vocational component will be developed for the upper grades as part of a curriculum reform project. A new examination system will be formulated for graduation from Grade 8 and to enable selection for Grade 9. Teachers currently within the system will be offered the opportunity to upgrade their qualifications to diploma level through an inservice program. New graduates from the teachers colleges will be diploma holders equipped to teach in the upper primary grades.

Post primary, the facilities freed up by the relocation of the Grade 7 and 8 classes, moved from the high schools to the primary schools, will be used in one of two ways. In the majority of schools there will be an immediate increase in the number of Grade 9 and 10 places—up to double in most cases. At the same time Grade 11 and 12 will be developed at selected schools. It is a government objective to have one such school in each province by 1997. Secondary education will therefore consist of four years—Grades 9 to 12. There will be no great increase in either the enrolments or number of teachers in the secondary schools over the plan period. However, additional teachers will be trained to fully localise the teaching force. The University of Papua New Guinea will be requested to develop programs for the upgrading of existing secondary school teachers.

The curriculum will be broadened to include more technical, agricultural, commercial, and scientific content. Vocational centres will become part of the secondary system. Open learning will provide an alternative opportunity for secondary education.

The net effect of all this on schooling will be greatly increased access at all grades. The major expenditures required will be the upgrading of facilities and provision of materials at the primary and

secondary levels, and the cost of elementary school teacher salaries. The unit costs of education in Grades 7 through to 12 will be reduced by the increased enrolments utilising facilities at existing primary and provincial high schools. This reduction is further enhanced by the almost complete abolition of boarding students in Grades 7 and 8.

Papua New Guinea continues to address educational expansion at the primary and secondary levels, the upgrading of technical skills training, and curriculum development and management, with assistance from international funding and technical agencies. Recent externally funded projects included the provision of advice and training in planning, advice on education resource centres, establishment of an evaluation unit to monitor project activities in general education, technical and teacher training through the World Bank (Education II and Education III), and the Asian Development Bank (Technical Education). In 1990, technical assistance from UNESCO helped to review the education system, which is now being reassessed by AusAID on its resource implications. AusAID has become the major contributor to reform activities with major programs in textbook and materials supply at the primary level, infrastructural development at the secondary level, rationalisation of colleges in the technical sector and a major teacher education project due to commence in 1997. Finally, AusAID have embarked on a major institutional capacity building project based around the establishment of the Facilitation and Monitoring Unit.

The expansion of the system in terms of enrolments and staffing is almost entirely at the low cost elementary end of the system.

A meticulous implementation schedule is essential in order to achieve these targets whilst at the same time benefiting from the significant unit cost savings that are available.

1.2 Country background

This section presents an assessment of major trends with implications for future education strategies.

Geographic

Among the countries of Asia and the Pacific, Papua New Guinea is unique in a number of ways. The country comprises over 600 islands, but eighty-five percent of its 463,000 square kilometre land mass is on the mainland. The mainland of Papua New Guinea has some of the most rugged terrain in the world. Seventy-five percent is covered by rainforest, and only five percent is suitable for large-scale cultivation. However, the land contains abundant quantities of natural resources including copper, gold, oil and natural gas.

Political

Papua New Guinea became independent in 1975. New Guinea was administered by the Germans from 1880 to 1914. After the First World War, it was administered by the United Nations. Papua, the southern mainland region, was a British colony until 1948 when Australia assumed joint administrative responsibility under the auspices of the United Nations.

Papua New Guinea adopted a parliamentary form of government following independence. The current single chamber parliament has 109 members with one person representing each of the nineteen provinces and the National Capital District. There are eighty-nine open constituencies. The Prime Minister and the Cabinet are chosen from the members of parliament. General elections are held every five years and a government cannot be changed for the first eighteen months after assuming power. Provinces have considerable autonomy, but rely to a large extent on the national government for funding. For example, provinces are responsible for literacy programs, primary and secondary education (with the exception of curriculum development). Finance is the major state-controlling mechanism on national and provincial government operations.

The single most important change on the political front that will effect education planning is the 1995 changes to the Organic Law on Provincial and Local Level Government. These changes will allocate responsibility for national policy and planning to the national government while the provinces are responsible for implementation.. The second tier of government at the provincial level will now comprise members of the National Parliament - the regional member becoming the Governor - and local, or community, government representatives.

People and population

Because of a poor transport network and the great distances between major population areas, communities in Papua New Guinea have developed their own languages, customs and traditions. As a result, the ethnic and cultural composition of the country is one of the most varied in the world, with the different tribal groups speaking more than 800 languages. Hiri/Police Motu, Melanesian Pidgin (Tok Pisin) are the national languages, and English is the official language.

The 3.5 million total population of Papua New Guinea is young — about 45% being under the age of fifteen. The population growth rate of 2.3 % is expected to result in a total population of 7.4 million by 2015. Ninety percent of the population derive their livelihood from rural farming on community-owned land. The population density is only 7.5 persons per square kilometre, one of the lowest in the world.

There has been considerable urban drift (4.5% annual increases during the 1980s) in recent years resulting, for the first time, in a significant number of landless youths in the cities alienated from their traditional cultures. Other main reasons for inter-provincial migration are plantation employment, resettlement from high population density areas, changing clan ties, tribal warfare, and relative dependency. Male migration is extensive, but has now been overtaken by female migration, with an increase of fifty percent during the 1971–1980 period.

Problems of large populations — which in Papua New Guinea's case was estimated at 3 512 000 in 1990 — usually arise from high birth rates. Life expectancy is estimated to be fifty-five years, which currently falls short of the sixty-five years average generally experienced by countries with similar income levels. With better medical care, life expectancy will move beyond the expected average of sixty-five years by the year 2010. By the same year, the birth rate is estimated to reach 32.1 per thousand, while the death rate is estimated at 9.2 per thousand.

During the 1995-2010 period, the population is expected to grow to more than 6 million. Funding for school facilities, program delivery, and staffing will be affected by the increase in enrolments at all levels of general education.

Higher projected fertility rates are the result of improved medical services, people marrying at a younger age, and a liberalisation in sexual practices. These factors will impact on the size of the population, age structure and distribution of public goods and services.

High birth rates during the last decade (1985-1995) mean that there will be a large number of females of child-bearing age in the 1995-2010 period, and the crude birth rate may rise. This means that the age structure will continue to show an increasing percentage of the population in the child-bearing age groups.

The 6 year old population in 1990 (which is what the plan takes as being its base line figure) is shown in Table 1 by sex. The growth figure is also shown by province. The census reports that growth rates for Gulf, Eastern Highlands, Simbu, East Sepik and Morobe are probably lower than the true figure, whilst East and West New Britain are higher than the true figure.

**Table 1 6 year old population by gender and province,
1990**

Province	Male	Female	Total	Growth rate
Western	1747	1676	3423	3.5
Gulf	1207	1125	2332	0.7
Central	2227	2090	4317	1.9
Milne Bay	2380	2221	4601	2.2
Oro	1691	1473	3164	2.2
Southern Highlands	6122	5444	11566	3.0
Eastern Highlands	5572	4499	10071	0.8
Simbu	2694	2480	5174	0.3
Western Highlands	5488	4483	9971	2.4
Sandaun	2420	2008	4428	2.0
East Sepik	4018	3724	7742	1.4
Madang	4519	3733	8252	1.8
Morobe	6037	5483	11520	2.0
West New Britain	2234	1988	4222	3.9
East New Britain	2943	2697	5640	3.4

New Ireland	1359	1269	2628	2.8
Manus	484	426	910	2.4
NCD	2827	2603	5430	4.7
Enga	3889	3483	7372	3.6
Papua New Guinea	59858	52905	112763	2.3

Source: Department of Education

If the growth rates given are applied to the total 6 year old population by sex for selected years, the result is as shown in Table 2

Table 2 Projected 6 year old populations by province, selected years

	1992	1996	2000	2004
Western	3667	4208	4828	5541
Gulf	2365	2432	2500	2571
Central	4485	4842	5226	5642
Milne Bay	4806	5243	5720	6240
Oro	3305	3605	3933	4291
Southern Highlands	12270	13810	15544	17495
Eastern Highlands	10233	10564	10906	11260
Simbu	5205	5268	5331	5396
Western Highlands	10455	11496	12640	13898
Sandaun	4607	4987	5398	5843
East Sepik	7960	8416	8897	9406
Madang	8552	9184	9864	10593
Morobe	11985	12973	14043	15200
West New Britain	4558	5311	6190	7213
East New Britain	6030	6893	7879	9007
New Ireland	2777	3102	3464	3868
Manus	954	1049	1154	1268
NCD	5952	7153	8595	10329
Enga	7912	9115	10500	12095
Papua New Guinea	113 594	124 808	137 385	151 513

Source: Department of Education

Gender issues

Papua New Guinean society is, with a few exceptions, male dominated. This goes some way to explaining why females have had less access to social and school opportunities. These restrictions are associated with socio-cultural restrictions which suggest that, because most females are expected to become housewives, there is no need for them to attend school and achieve success. If present gender disparities continue, then basic 'Education For All' can never become a reality.

However, in response to male domination, there have been encouraging signs of late. Recent developments in the formation of women's pressure groups such as the National Council of Women, provincial women's councils, Women In Politics and others, demonstrate the potentially powerful push by women for their fundamental rights and equal opportunities in all aspects of national development.

Statistics are disaggregated by gender throughout this volume. As will be seen there are differences between males and females regarding opportunity and concerning achievement. These differences are not, however, as pronounced as many people would believe - or like to believe. There are no institutional impediments established to hinder the progress of girls through the education system.

Health

Deaths in child birth, malaria, heart disease and malnutrition continue to be major problems affecting the well being of Papua New Guineans. There is continual debate regarding the provision of health services in the rural areas, which may be one of the causes of increased urban migration discussed above. There is considerable public concern regarding the rapid spread of sexually transmitted diseases (STDs), especially gonorrhoea, syphilis, and recently Acquired Immune Deficiency Syndrome (AIDS).

Law and order

The incidence of serious crime has been on the increase since the 1960s, particularly in the urban centres. Starting out as small-scale public nuisances, criminals now are involved in burglary, car thefts, armed robbery, murder, rape, and hard drugs. Connections with international crime syndicates involved in the drug trade, prostitution, and open rebellion against the government are some of the more serious threats to the State, the general populace, and governmental stability.

The economy

In 1988, agriculture accounted for an estimated 34.6 percent of Gross Domestic Product (GDP), mining 14.7 percent, manufacturing 9.0 percent and construction 3.3 percent. In the agricultural sector, the main cash crops include coffee, palm oil and cocoa. However, it is the mining and petroleum sectors which are playing an increasingly important role in the economy of the 1990s. Only fourteen percent of the labour force is occupied in formal wage employment. Another thirty-four percent are engaged in informal commercial activities, and over fifty percent exist in a subsistence economy or are unemployed. Per capita Gross National Product (GNP) in the late 1980s was estimated at K700. Government expenditure as a proportion of GDP averaged thirty-six percent over the 1985 to 1988 period, a high ratio when compared with other countries.

With its per capita GNP of K700, the World Bank classifies Papua New Guinea as a "lower middle income" country. However, its educational status is worse than the average for "low income countries". Adult illiteracy in 1990 was estimated at 45.1 percent — 49.5 percent for males and 40.3 percent for females. Gross enrolment in primary education is approximately seventy-five percent, but a large proportion of students are overage. The attrition rate between Grades 1 and 6 is forty-five percent. Only thirty-five percent of primary graduates moved on to secondary education.

Educational expenditures

An analysis of previous educational funding reveals a marked increase in the role played by the government. A legislative change was made in 1977 to transfer the planning, development and expenditure of primary, vocational and lower secondary (Grades 7-10) education to provincial authorities. This initiative was at first successful, with the provinces having adequate funds to meet their needs.

However, many provincial governments quickly found that they were unable to accommodate this increase in their expenditure. Their budget deficits increased and, in certain cases, there were less resources available to develop new projects. To alleviate this situation, by the beginning of 1980, the government introduced subsidies (though still insufficient) in order to meet the cost of recurrent expenditures. These subsidies were designed to cushion the difficulties facing the provinces, and to underwrite the new development priorities given to secondary education. The government decided to fund capital costs in a number of disadvantaged provinces. As a consequence, funding for secondary education by the National Ministry of Education has tripled in ten years (increasing from K4 million in 1981, to K12 million in 1991).

Government revenue has steadily increased as the result of improvement in the collection of taxes, increases in taxation rates and the introduction of a number of new mining activities. This has made it possible for the government to increase its funding for education. Since 1991, the appropriations have levelled off in real terms, and it appears that it would be difficult to increase funding much further.

2 DEVELOPMENTS IN THE EDUCATION AND TRAINING SECTOR

This section presents an assessment of the major educational developments and trends by sector.

Education is declared to be a fundamental right in the country's political goals and the National Constitution. It is a prerequisite to the mobilisation that is necessary for societal development.

In a global sense, the right to education and the right to learn unfortunately still constitute a vision rather than a reality, although demands for educated people continue to grow.

The crucial issues affecting educational provision in Papua New Guinea are the lack of access for all children to schooling, and low retention rates, especially at the primary level. There are also problems in harnessing the resources, and managing programs and project priorities in order to achieve the desired education mission objectives. The development of relevant learning programs is vital to educate people to manage their lives in the contexts of prevailing problems and future opportunities in their chosen communities.

2.1 Early childhood education

Early childhood education is not part of the formal education structure, which starts with elementary schooling at the age of six years. It is not, then, a responsibility of the Department of Education.

The early childhood program should address the needs of the 0 - 5 age group. Many problems in this age group relate to social pressures, inadequate parental care, malnutrition, the high incidence of disease, and the inadequacy of pre-elementary literacy and skills training. Projects will be designed to address health and pre-elementary literacy conditions to enhance the development of quality learning environments as the basis for learning for the next level.

Early intervention programs for educationally disadvantaged children have shown their worth in other countries around the world. Benefits include higher levels of academic achievement through higher success rates in primary schools. In Papua New Guinea, the Department of Health and non-government organisations have been the only agencies to establish specific programs which are designed to address early childhood problems. Interventions include the provision of health and nutritional services, as well as learning opportunities.

Early Childhood Development programs recognise that learning begins at birth, well before entry to formal schooling. Early childhood development activities can alleviate the cognitive and behavioural disadvantages that originate from malnutrition, disease, inadequate care and an unstimulating social environment, through the implementation of early intervention programs.

Non-government organisations and other private agencies are also conducting activities at the local level. The United Nations Children's Fund (UNICEF), in collaboration with the government, non-government organisations and other agencies, is planning to carry out a program of Early Childhood Development and Education (ECDE). The program will promote the importance of early childhood development and pilot test innovative approaches with 250,000 children in the 0-5 age group of early child development.

Communities and groups providing early childhood development programs will set their own policies commensurate with their needs and capacities. However, in the preparation for the preparatory stage of elementary education, assistance will include increased access to education, improved quality of learning and more effective use of learning.

2.2 Elementary education

Before Independence there was considerable pre schooling which was largely carried out by the missions. Following the establishment of a unified teaching service preschool education declined as it was not part of the formal system.

The most popular initiative to promote preschool education has been the "Tok Ples" (local dialect) preschools which have been developing over the last twenty years or so through local community efforts, with assistance from non-government organisations. The Tok Ples schools were designed to provide preliteracy training in the local language through culturally based education that is relevant to the community. However, apart from a few exceptions, preschool was not a prerequisite for entering community school. These initiatives were by no means nation wide, although most provinces had some such schools. The results from North Solomons, Enga and East New Britain Provinces, which ran three of the more successful programs, and some urban-based preschool programs, have shown that students who attended preschools do better at primary school.

The elementary schools in the restructured education system will evolve from the experiences of the Tok Ples Pre Skuls (TPPS). In addition, the experiences of the Summer Institute of Linguistics (SIL) will be utilised in areas of curriculum development, teacher training and materials production.

In 1992 the Department of Village Services provided some funding for TPPS in terms of teacher salaries and other grants. At this time it was estimated that there were up to 80,000 attending Tok Ples Pre Skuls although these figures can not really be verified.

The success of the TPPS programs lay in the extent of community involvement. It is vital that when the formal elementary schools take root, this community support is not lost. It is because of this that many of the policies regarding elementary education have a strong community base. Community responsibilities include the nomination of the teachers and selection of the language of instruction in the school.

Elementary school trials began in the Milne Bay and New Ireland provinces in 1994 and 1995 respectively. Enrolments and staffing for 1995 are shown in Table 3.

Table 3 Elementary school enrolment by province, sex and grade, 1995

	Prep			Elementary 1			Elementary 2			Total		
	M	F	T	M	F	T	M	F	T	M	F	T
Milne Bay	217	223	440	297	258	555	119	96	215	633	577	1210
New Ireland	157	130	287			0			0	157	130	287
Total	374	353	727	297	258	555	119	96	215	790	707	1497

Source: Department of Education

Staffing by sex and pupil teacher ratios for 1995 are shown in Table 4.

Table 4 Elementary school staffing by province and sex and teacher pupil ratios, 1995

	Male	Female	Total	%age female	Tr/pupil ratio
Milne Bay	10	27	37	73.0	32.7
New Ireland	4	10	14	71.4	20.5
Total	14	37	51	72.5	29.4

Source: Department of Education

The participation of women in elementary teaching is very encouraging although the two provinces involved have traditionally had large numbers of female teachers in all sectors. The teacher pupil ratio in New Ireland is low because of the remote areas in which the pilot projects have been set up. It will be a number of years before assumptions made regarding class size and teacher pupil ratios can be validated or not. It is also too early to make any meaningful comments regarding retention rates in the elementary schools, which are hoped to be an improvement over those existing in the community schools.

The successful implementation of the elementary level of education is vital to the success of the reform. Virtually the entire expansion of the system is concentrated at the elementary sector of the system. This is the sector with the lowest unit costs. Teachers will work shorter hours and their salaries will be commensurate with the hours that they work and the training that they have received.

2.3 Primary education

Community schools have catered for Grades 1 to 6 and children have been expected to enrol at age 7.

Many communities, however, are not well-served by their schools and about twenty five percent of potential students still remain outside formal schooling. Consequently, many youths and adults do not possess the basic literacy and numeracy skills that are required for living effective lives. The potential development effects of education are being threatened by the growing ineffectiveness of primary education, which in turn compromises human capital development. Students who complete Grade 6 are poorly prepared for secondary and tertiary education and are ill-equipped for life-long learning. Insufficient numbers of well-educated managers and teachers, and the lack of any effective participation by parents contributes to this lack of development. The most obvious consequences of such a poor quality education are low completion and achievement rates.

Enrolments in the primary sector have risen over the years as shown in the chart below. Grade 1 enrolments have risen at a rate of about 4.2% annually. The eligible entry age for community school is the 7-9 year age group. This is an arbitrary age range, because provinces have enrolled students up to ten and even twelve years of age in Grade 1.

From 1975 to 1990, the number of children enrolled in the community school system rose by about 70%. This gives an annual average increase of 4.2 percent.

Table 5 shows the number of community schools by province in the years 1983, 1988 and 1993.

Table 5 Number of community schools by province, selected years

Province	1983	1988	1993
Western	86	64	65
Gulf	70	77	86
Central	143	159	167
Milne Bay	150	156	165
Oro	78	85	95
Southern Highlands	124	141	141
Eastern Highlands	140	168	179
Simbu	92	101	112
Western Highlands	117	128	145
Sandaun	116	124	155
East Sepik	162	200	216
Madang	128	155	187
Morobe	199	239	271
West New Britain	98	120	130
East New Britain	117	123	134
New Ireland	97	101	113
Manus	53	55	65
North Solomons	135	147	79
NCD	31	34	36
Enga	88	82	78
KLMD	na	44	54

Papua New Guinea	2224	2503	2673
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Source: Department of Education

In Table 6 the figures for 1995 have been split up into operating agencies to give an indication of the role that the church agencies have played in the education system of the country.

Table 6 Number of community schools by province and agency, 1995

	Govt	Cath	UC	Luth	Ang	EA	Other	Total
Western	34	6	8			25	1	74
Gulf	67	20	18					105
Central	78	61	26					165
Milne Bay	54	43	45		24		7	173
Oro	54		1		42		1	98
Southern Highlands	84	19	15	8		26	2	154
Eastern Highlands	138	6		15	4	10	1	174
Simbu	71	25		10	5	1		112
Western Highlands	53	48	1	26	4	19	1	152
Enga	50	23		27		7	2	109
Morobe	187	8		83				278
Madang	73	69		38	7	3	1	191
Sandaun	55	73				35		163
East Sepik	48	100				26		174
Manus	31	20				14		65
New Ireland	41	46	27					114
NCD	27	8			2			37
East New Britain	53	59	22					134
West New Britain	65	70	4		3			142
North Solomons	19	69	17		1			106
KLMD	24	21				15	1	61
Total	1306	794	184	207	92	181	17	2781

Source: Department of Education

Table 7 is a summary for the whole of Papua New Guinea showing the percentage of schools operated by the different agencies. It is noteworthy that less than half the schools at this level are operated by the Government.

Table 7 Number of community schools by agency, 1995

Agency	No of schools	%age of total
Government	1306	47.0
Catholic	794	28.6
United Church	184	6.6
Lutheran	207	7.4
Anglican	92	3.3
Ev Alliance	181	6.5

Others	17	0.6
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Source: Department of Education

A further concern is the very large number of small schools in the country. The level of a school is determined by the number of teachers within that school and, as will be seen later, these small schools perform poorly in the Primary Education Certificate Examination. Table 8 shows the number of schools in each province by level in 1995.

Table 8 Number of community schools by province and level, 1995

Province	Level 2	Level 3	Level 4	Level 5	Level 6	Level 7	Level 8	n/k	Total
Western									
Gulf	62	28	9	2				5	106
Central	100	47	13	9					169
Milne Bay	84	65	13	3	1				166
Oro	62	24	7	7	1			1	102
SHP	19	79	36	24	1				159
EHP	41	120	34	14	3			1	213
Simbu	5	55	34	14	3	1			112
WHP	21	77	47	16	4				165
Sandaun	80	57	21	5				1	164
E Sepik	118	79	24	10	2			3	236
Madang	39	104	33	11	2		1	1	191
Morobe	72	148	33	17	7			1	278
WNBP	78	36	21	9	1				145
ENBP	47	65	17	14					143
NIP	45	59	6	4				1	115
Manus	45	16	3	1					65
NSP	61	65	26	9				2	163
NCD	0	2	3	19	11		2		37
Enga	25	49	30	10	2				116
KLMD	32	19	5	4				1	61
PNG	1036	1194	415	202	38	1	3	17	2906

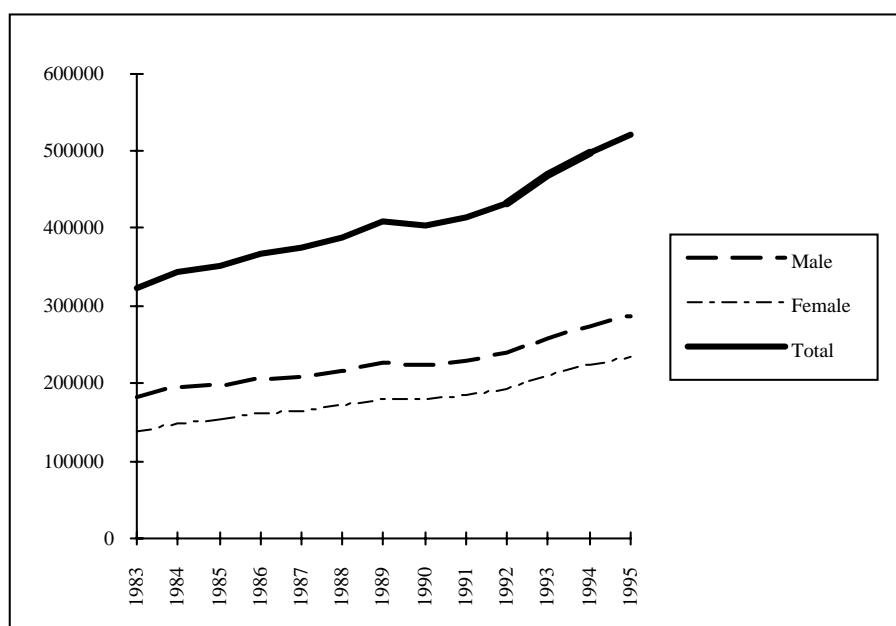
Source: Department of Education

Notes: n/k = not known

The break down for Western Province is not available.

Enrolment fluctuations in some provinces are caused by irregular intakes into these very small schools that, characteristically, only have biennial or triennial intakes. Large numbers of these schools exist in remote regions, disrupting the orderly flow of students through the school system. Only about 40% of community schools in the country have annual intakes. The decreases in enrolment from 1990 are assumed to be the result of the problems experienced in the North Solomons Province. Chart 1 shows total primary school enrolment.

Chart 1 Total primary school enrolment by sex, 1983 to 1995



The Sector Study identified a number of areas of concern for the primary sector.

Access

The Gross Enrolment Rate (GER), the commonly used indicator to measure access, has risen although recent increases have not been as much as had been hoped. Figures from 1990 onwards use 1990 population estimates, whereas earlier years use projections from the 1980 census. In order to reach the Government stated objective of Universal Primary Education, the Gross Enrolment Rate has to reach 100%.

Table 9 Gross Enrolment Rate, 1983 - 1995

	Gross Enrolment Rate		
	Male	Female	Total
1983	68.4	56.2	62.6
1984	72.1	59.8	66.2
1985	72.1	61.1	66.8
1986	75.0	63.5	69.5
1987	75.1	64.3	69.9
1988	77.0	65.7	71.5
1989	80.0	67.6	74.0
1990	68.1	64.2	66.3
1991	68.3	64.9	66.7
1992	69.9	66.5	68.3
1993	71.5	70.9	72.1
1994	75.1	72.5	73.9
1995	75.9	74.1	75.1

Source: Department of Education

Table 10 Gross Enrolment Rates by sex and province, 1995

	Male	Female	Total
Western	80.8	81.6	81.2
Gulf	92.9	85.0	89.3
Central	82.4	81.8	82.1
Milne Bay	74.0	77.3	75.6
Oro	71.2	71.2	71.2
Southern Highlands	68.1	66.8	67.5
Eastern Highlands	76.2	76.5	76.3
Simbu	92.1	81.9	87.5
Western Highlands	60.1	64.1	61.8
Sandaun	74.6	70.5	72.8
East Sepik	74.0	71.4	72.8
Madang	73.8	73.6	73.7
Morobe	87.4	86.0	87.7
West New Britain	87.1	85.4	86.3
East New Britain	79.6	79.6	79.6
New Ireland	83.8	83.3	83.6
Manus	89.4	86.0	87.7
North Solomons	64.6	64.2	64.4

NCD	84.9	86.8	85.8
Enga	64.1	56.2	60.5
KLMD	95.0	89.7	92.5
Papua New Guinea	75.9	74.1	75.1

Source: Department of Education

Enrolment rates - both Gross and Secondary, which is discussed in the relevant section - are severely affected by two major problems within the education system as it stands. These two problems are retention at the primary level, and access at the post primary level.

Age of entry

There is a wide age disparity among primary school pupils. This age disparity has the potential to skew the figures for the GER considerably. This is because of the large number of children outside the 7 to 12 year age group being included in the Grade 1 to 6 enrolment. The Actual Enrolment Rate (AER) can not be calculated until the age of all school children is known. It is to be hoped that over a period the AER will become closer to the GER.

There are a number of reasons why children enrolled might be outside of the 7 - 12 age group:

- not enough space to enrol in Grade 1 classes - this is the case in urban areas, particularly Port Moresby;
- no Grade 1 class at the school - this is often the case in many rural schools. Only about 40% of schools in the country have annual intake patterns; and
- parental attitudes. There is evidence, largely anecdotal, that some parents consider the official age of entry to school as being 'too young' and so hold them back for a year or two. One reason for this could be the distance that children need to walk to school.

The official entry age to Grade 1 is seven years old. Details from a 1988 survey are shown in Table 11. This shows that many of the children who are in primary schools are overage. Overaged students (10-12 years of age or older), representing about 23% of total enrolments continue to enrol in Grade 1. Seven year olds represented less than twenty-five percent of the children enrolled. The 1990 census suggested that there were 'children' as old as 23 years attending community school. Even the census report described this as being 'suspicious'!

Table 11 Composition of Grade 1 Enrolment, by age, 1988

Age	%age of Grade 1 enrolment
7	22.54
8	29.54
9	23.04
10	12.45
11	5.08
12+	5.23
Total	97.88

Source: Angus Ross Grade 1 survey 1988.

The only time that ages are sought is when the Grade 6 students sit for their Primary Education Certificate Examination. Ages are noted on the Student Information Booklets that are then forwarded to the Measurement Services Unit. These ages are, supposedly, the age of the child at the end of that year. The latest information available from the Measurement Services Unit, as shown in Table 12, is for the 1993 Grade 6 students who sat for the Primary Education Certificate Examination.

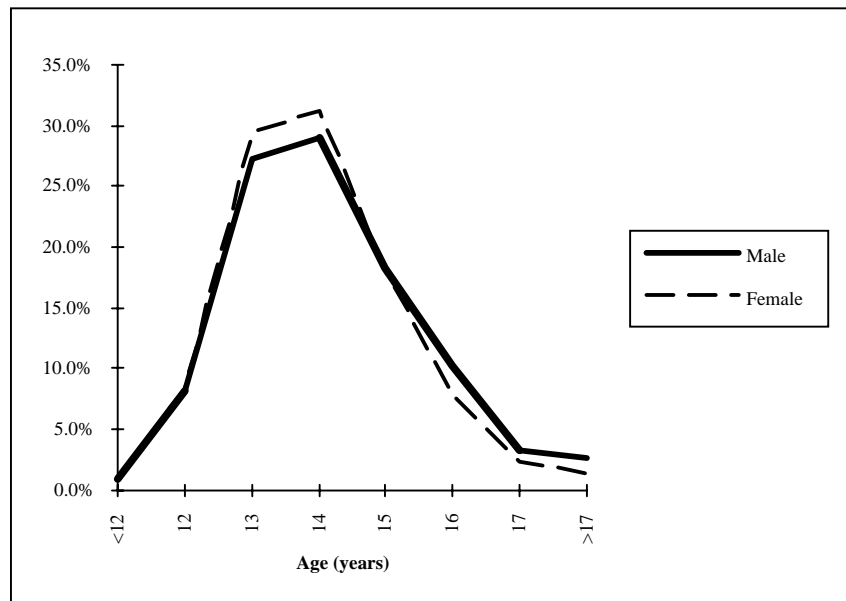
Table 12 **Age of students taking Primary Education Certificate Examination, 1993**

	Male	Female	Male	Female
Less than 12 years	58	55	0.9%	1.1%
12 years	513	408	8.2%	8.4%
13 years	1715	1436	27.3%	29.5%
14 years	1821	1517	29.0%	31.1%
15 years	1146	880	18.3%	18.1%
16 years	645	386	10.3%	7.9%
17 years	210	117	3.3%	2.4%
More than 17 years	166	71	2.6%	1.5%

Source: Measurement Services Unit

The age distribution of the boys and girls is very similar as shown in Chart 2. There is a slightly higher percentage of girls in the 13 and 14 year age group with a few more boys in the older age categories.

Chart 2 Age distribution of boys and girls. 12 - 17 year age group



Retention

The single biggest problem in primary education is the retention rate. This has slowly been dropping and has now reached the stage whereby almost half the children who start Grade 1 drop out before completing Grade 6.

Table 13 Community school retention, 1983 to 1990 cohorts

Cohort	Male	Female	Total
1983 to 1988	62.1	62.2	62.1
1984 to 1989	60.1	61.8	60.9
1985 to 1990	59.0	56.9	58.1
1986 to 1991	56.1	55.6	55.9
1987 to 1992	57.7	55.4	56.7
1988 to 1993	56.9	55.7	56.4
1989 to 1994	57.0	55.9	56.5
1990 to 1995	62.6	60.3	61.6

Source: Department of Education

These figures, as is frequently the case, hide many differences between provinces. The figures for the 1990 cohort, who completed Grade 6 in 1995 are shown in Table 14.

Table 14 Retention rates by sex and province, 1990 cohort

Province	Male	Female	Total
Western	63.9	60.7	62.4
Gulf	69.9	68.3	69.2
Central	64.2	62.6	63.5
Milne Bay	71.0	74.3	72.6
Oro	49.0	54.9	51.6
Southern Highlands	64.1	59.8	62.2
Eastern Highlands	46.4	41.5	44.2
Simbu	58.7	31.3	50.8
Western Highlands	47.6	44.7	46.3
Sandaun	56.3	53.4	55.0

East Sepik	62.7	59.3	61.1
Madang	71.6	70.3	71.0
Morobe	64.9	60.9	63.1
West New Britain	66.8	73.9	70.0
East New Britain	62.9	63.8	63.3
New Ireland	62.2	65.2	63.6
Manus	72.2	76.4	74.1
North Solomons			
NCD	86.1	83.7	85.0
Enga	44.6	40.4	42.9
KLMD	67.4	65.0	66.3
Papua New Guinea	62.6	60.3	61.6

Source: Department of Education

Note: There are no figures for the North Solomons Province because there was no intake reported in 1990.

The reasons for very low retention rates are many and varied although the language of instruction is considered to be a major contributing factor.

Transition rates

A further reason for the high attrition rate could be the comparatively low transition rates between the levels of education as shown in Table 15. There has always been a huge institutionalised push out between Grades 6 and 7. It has long been a government objective to raise the transition rate to 50% but this has not been achieved despite opening many high schools.

Table 15 Grade 6 to 7 transition, 1987 to 1994

Cohort	Male	Female	Total
1987 to 1988	40.1	34.2	37.5
1988 to 1989	38.4	31.4	35.5
1989 to 1990	36.8	29.9	33.8
1990 to 1991	37.3	33.3	35.3
1991 to 1992	41.9	35.9	39.3
1992 to 1993	43.1	38.8	41.3
1993 to 1994	49.2	44.1	46.9
1994 to 1995	50.5	45.7	48.4

The rises in recent years are due to the introduction of Grades 7 and 8 in the primary schools. Transition rates by sex and province are shown in Table 16.

Table 16 Grade 6 to 7 transition by sex and province, 1994 to 1995

Province	Male	Female	Total
Western	34.4	28.5	29.0
Gulf	39.2	49.6	43.4
Central	46.9	44.5	45.8
Milne Bay	38.4	38.2	38.3
Oro	55.2	57.5	56.2
Southern Highlands	61.3	53.3	57.9
Eastern Highlands	39.8	30.4	36.0
Simbu	66.6	46.8	58.3
Western Highlands	39.2	28.8	34.8
Sandaun	39.5	31.1	36.2
East Sepik	43.6	36.7	40.4
Madang	48.3	48.0	48.2

Morobe	39.6	34.0	37.2
West New Britain	82.2	78.8	80.7
East New Britain	48.3	47.1	47.7
New Ireland	73.2	66.5	70.0
Manus	63.8	62.6	63.2
North Solomons	52.7	52.0	52.3
NCD	44.8	45.5	45.2
Enga	105.5	112.7	108.2
KLMD	47.4	42.3	45.2
Papua New Guinea	50.5	45.7	48.4

Source: Department of Education

It is unclear why the transition for Enga Province is greater than 100 for both boys and girls.

Staffing

Staffing in Community Schools has, necessarily, risen in line with enrolments. The teaching service has been fully certificated and localised in this sector since Independence. Table 17 and Chart 3 illustrate the trends in staffing by year from 1983.

Chart 3 Primary School staffing by sex, 1983 to 1995

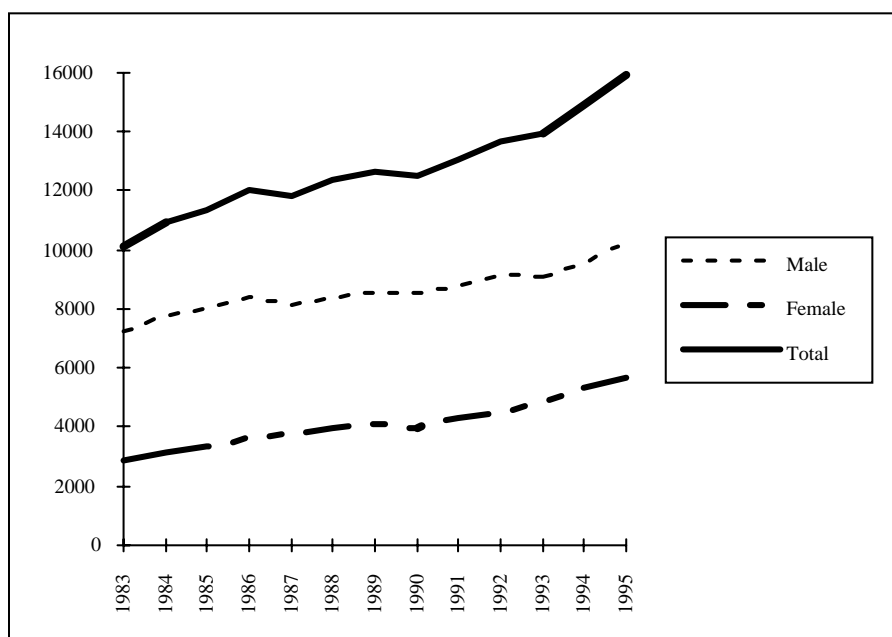


Table 17 Primary school, staffing by sex and year, 1983 to 1995

	Male	Female	Total	% age female
1983	7237	2893	10130	28.6
1984	7767	3146	10913	28.8
1985	7973	3362	11335	29.7
1986	8409	3636	12045	30.2
1987	8115	3734	11849	31.5
1988	8424	3940	12364	31.9
1989	8567	4112	12679	32.4
1990	8557	3957	12514	31.6
1991	8734	4313	13047	33.1
1992	9175	4518	13693	33.0
1993	9116	4860	13976	34.8
1994	9591	5301	14892	35.6
1995	10283	5680	15963	35.6

Source: Department of Education

The percentage of women in the teaching force has risen slightly over the period, although again these figures hide wide provincial variations. These differences are shown for the 1995 figures in Table 18. More than 50% of the primary school teachers in the National Capital District and New Guinea islands are female. Provinces in the Highlands region have by far the smallest percentage of female teachers

Table 18 Primary school staffing by sex and province, 1995

Province	Male	Female	Total	%age female
Western	284	80	364	22.0
Gulf	257	89	346	25.7
Central	411	237	648	36.6
Milne Bay	417	323	740	43.6
Oro	242	181	423	42.8
Southern Highlands	1023	216	1239	17.4
Eastern Highlands	725	444	1169	38.0

Simbu	683	232	915	25.4
Western Highlands	763	347	1110	31.3
Sandaun	499	147	646	22.8
East Sepik	688	326	1014	32.1
Madang	821	341	1162	29.3
Morobe	1035	561	1596	35.2
Manus	97	121	218	55.5
West New Britain	393	326	719	45.3
East New Britain	365	436	801	54.4
New Ireland	257	263	520	50.6
North Solomons	278	358	636	56.3
NCD	227	451	678	66.5
Enga	624	133	757	17.6
KLMD	194	68	262	26.0
Papua New Guinea	10283	5680	15963	35.6

Source: Department of Education

Figures produced in 1995 also show the number of non teaching headteachers by sex and province. These are headteachers of the largest schools in the country. Out of 208 of these headteachers only 14 were women - less than 7%. Even in the National Capital District where about two thirds of the teachers are women only about one quarter of the headteachers - 8 out of 31 - are female. It is clear that even though increasing numbers of women are in teaching they are not gaining the promotions to higher levels. This gender imbalance is even more pronounced amongst the Inspectorate.

Teacher pupil ratios

One of the major measurements of the internal efficiency of an education system is that of the teacher pupil ratio. At the primary school level teachers are deployed at the rate of one teacher per class. The size of the class is immaterial and provinces lay down minimum Grade 1 class sizes. This means that many schools only have an intake once every two, three or even four years.

The teacher pupil ratio at the primary level has increased marginally over the last ten years. The national average, however, conceals the wide variation across the country from a high of over 40 in the NCD and some Highlands provinces to the low 20s in Manus and New Ireland. Variations are inevitable given the highly dispersed population and rugged terrain of Papua New Guinea which makes it difficult to increase class size in some of the more remote areas of the country. Table 19 shows the ratios by province for the years 1992 through to 1995.

Table 19 Teacher pupil ratios by province, 1992 to 1995

Province	1992	1993	1994	1995
Western	24.7	28.8	22.6	26.9
Gulf	27.9	29.5	31.8	32.8
Central	33.4	32.6	35.0	35.4
Milne Bay	31.0	30.8	30.6	32.2
Oro	32.8	34.2	35.0	35.1
Southern Highlands	31.9	33.6	36.2	37.3
Eastern Highlands	31.6	40.6	35.3	35.7
Simbu	34.2	32.5	31.5	32.7
Western Highlands	34.5	35.5	36.3	34.0
Sandaun	28.3	28.7	28.9	28.9
East Sepik	30.3	31.4	33.0	37.3
Madang	32.9	33.6	32.7	33.3
Morobe	35.2	36.1	36.5	36.6
West New Britain	27.2	28.6	29.8	32.9
East New Britain	32.3	33.1	31.9	33.2
New Ireland	24.2	23.8	24.8	25.6

North Solomons	32.1	31.0	32.0	31.9
NCD	39.5	39.6	41.4	41.2
Enga	28.9	43.2	41.5	34.6
KLMD	27.7	36.6	38.8	39.4
Papua New Guinea	31.7	33.5	33.4	33.9

Source: Department of Education

The wide range in teacher pupil ratios arise for a number of reasons. Firstly, there are many more remote schools in some provinces than others making it very difficult to staff such schools satisfactorily. Secondly, in recent years there has been a greater tendency for teachers to return to their home provinces. This has led to severe shortages in some places and surpluses in others. Although it would be unrealistic to expect a constant ratio across the whole country efforts are being made to narrow the gap. Two major strategies could be multigrade teaching and the Disadvantaged School Allowance (DSA).

Multigrade teaching should mean that more efficient use can be made of teacher resources in certain provinces. The number of multigrade classes has risen over the last few years from 101 in 1993 to 232 in 1995. The cause of this rise, however, has been a lack of teachers rather than a conscious decision to improve ratios through rationalisation. In 1995 there was opportunity for a further 176 multigrade classes even allowing for fairly strict criteria - not including Grades 1 or 6, and with a total student number of 36 or less.

A further advantage of the institutionalisation of multigrade teaching would be that it would allow annual intakes in all schools. This, it is hoped will help in the improvement of retention rates as well as the teacher pupil ratio.

The Disadvantaged School Allowance, first introduced in 1975, needs to be further strengthened to allow for greater mobility of teachers both between and within provinces. The DSA was set at K200 in 1975 and is still at the same level 20 years later.

Quality

Grade 6 examination

Grade 6 children sit each year for the Primary Education Certificate Examination (PECE). Children sit for three examinations: two Basic Skills examinations (English, which includes a Written Expression component, and Mathematics) and a Combined Subjects Examination. The two Basic Skills tests are criterion referenced with the Combined Subjects being norm referenced. These exams are used by provinces for selection purposes for entry into Grade 7.

The PECE has always been used by provinces to select children for Grade 7 in the high schools. This role for the examination will diminish as the reform implementation gathers pace. Children will, however, still be required to sit for the examination in order to receive a Grade 6 Certificate. The Department wishes this to continue as Grade 6 is the only level of schooling where standards are monitored on a regular, annual basis.

Test scores have indicated, through the Measurement Services Unit Standards Monitoring Project, that the quality of primary education has gradually improved, although it varies greatly between provinces, and also within provinces.

'The Standards Monitoring Project was initiated as part of the World Bank Education II Project in 1982. Using Item Response theory (Rasch Analysis), the Measurement Services Unit compared standards of achievement in English and Mathematics at the grade 6 level from 1982 to 1986.

In 1987 the PECE was drastically reformed to place greater emphasis on the assessment of Basic Skills and the application of these Basic Skills. The methodology of the Standards Monitoring Project was also reformed at this time and 1987 becomes the new base line for comparative analysis.'

Source: Standards Monitoring Project Report 11 - 1987 to 1992

The Monitoring Project has suggested over the years that urban schools achieve better than rural, and that larger schools do better than smaller ones. An analysis of results is carried out using a number of variables.

1994 analysis of PECE results

These are the most recent PECE results to have been analysed and findings are consistent with findings from earlier years. 12,500 records were analysed, approximately one in every four. It is important to realise that the figures presented are the estimated means of performance on the monitoring test, not the actual means from the examination.

i by sex

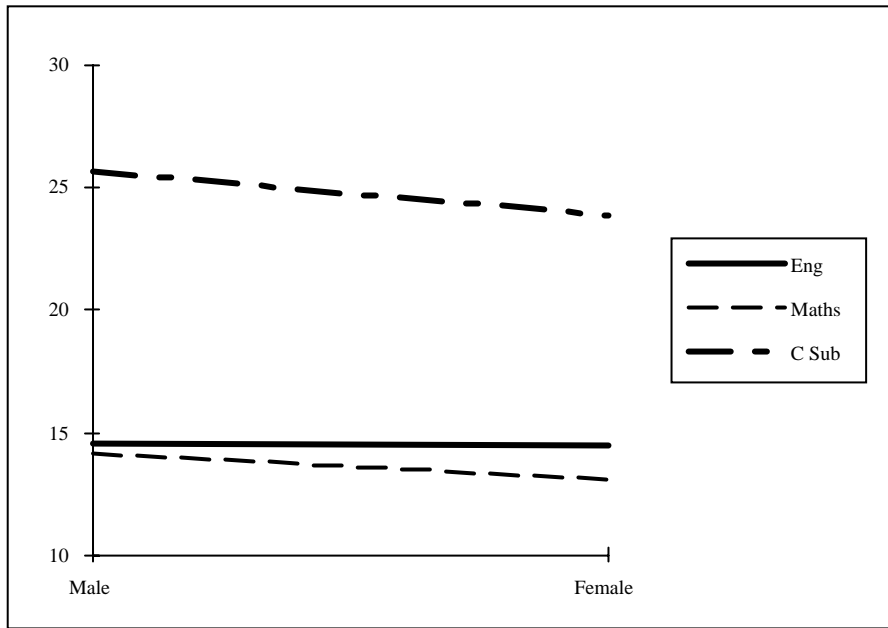
Girls perform marginally better in English with boys performing better in the two other examinations, as shown in Table 20 and Chart 4.

Table 20 1994 mean results by sex and examination

	Eng.	Maths.	Com. Subs.	No. of sts.
Male	14.55	14.13	25.67	7150
Female	14.48	13.06	23.83	5463

Source: Measurement Services Unit

Chart 4 Means by sex and examination, 1994



ii by age

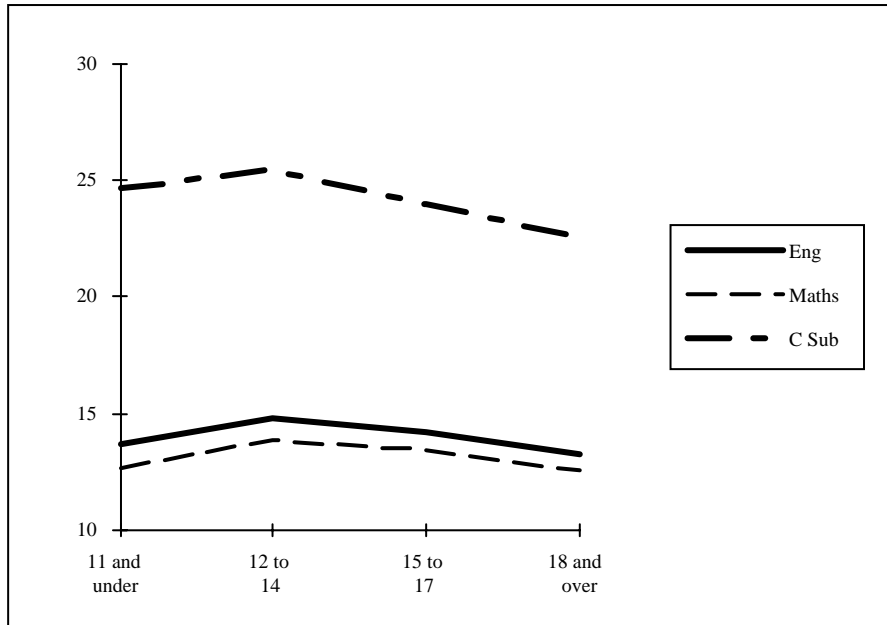
Children who start at the recommended age of 7 will be 13 when they complete Grade 6. Analysis of results by age, as shown in Table 21 and Chart 5 suggest that the children of this age perform better in the Grade 6 examinations than those children who are rather older.

Table 21 1994 mean results by age and examination

	Eng	Maths	Com. Subs.	No. of sts.
11 and under	13.70	12.68	24.66	79
12 to 14	14.76	13.86	25.44	7872
15 to 17	14.18	13.42	24.02	4115
18 and over	13.23	12.55	22.52	355

Source: Measurement Services Unit

Chart 5 Means by age and examination, 1994



iii by location (rural or urban)

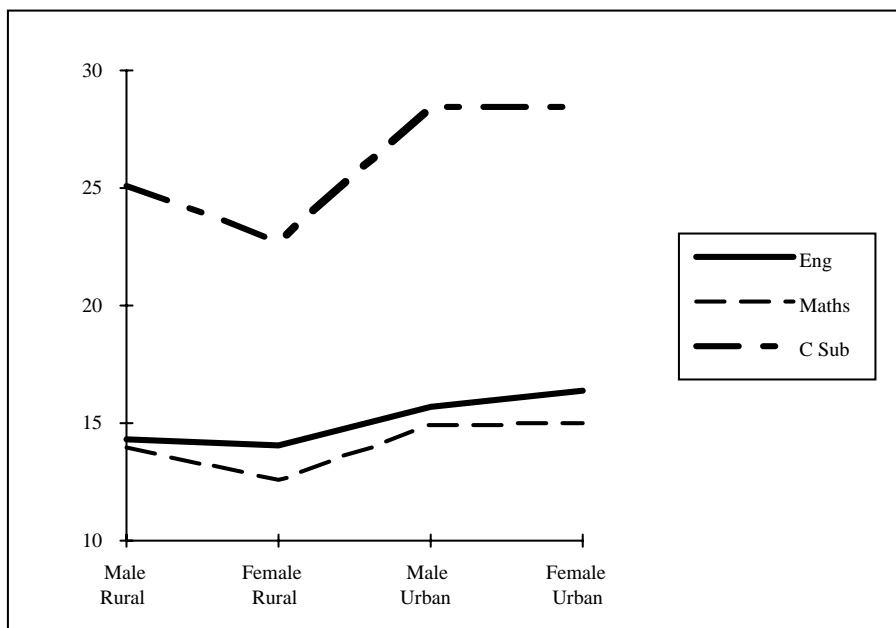
Urban schools achieve better results than do rural schools as could be expected. Interestingly, there is very little difference in the performance of boys and girls in urban schools, unlike the rural schools. This is shown in Table 22 and Chart 6.

Table 22 Mean results by location and examination, 1994

	Eng	Maths	Com. Subs.	No. of sts.
Male Rural	14.31	13.97	25.09	5904
Female Rural	14.02	12.59	22.71	4400
Male Urban	15.66	14.87	28.45	1246
Female Urban	16.38	15.00	28.47	1063

Source: Measurement Services Unit

Chart 6 Means by location and examination, 1994



vi by level of school

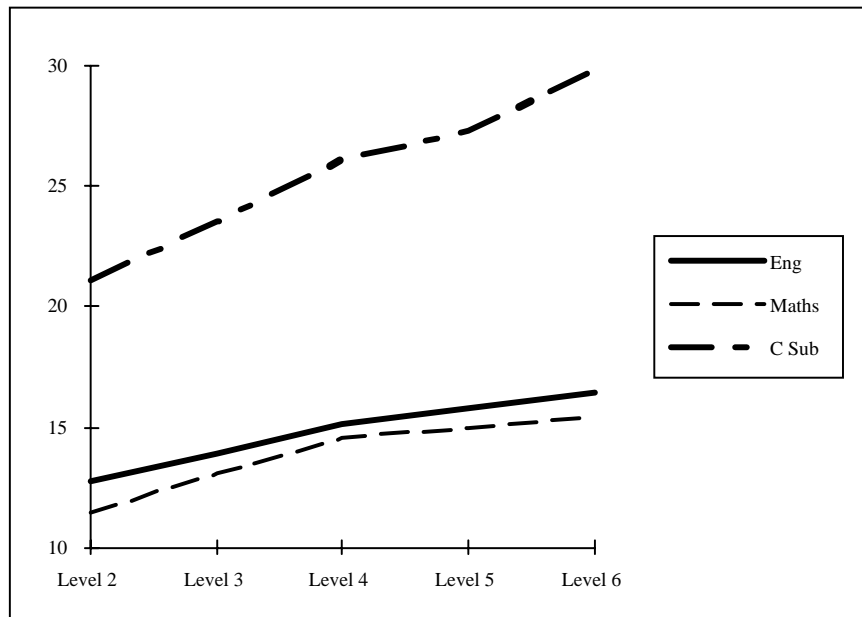
As could be expected the larger the school then the higher the achievement of that school. This is obviously linked with the previous analysis of the location of schools. The majority of Level 5 and 6 schools are in the urban areas. This is shown in Table 23 and Chart 7.

Table 23 Mean results by school level and examination, 1994

	Eng	Maths	Com. Subs.	No. of sts.
Level 2	12.75	11.44	21.13	1806
Level 3	13.91	13.07	23.58	4814
Level 4	15.11	14.53	26.09	2754
Level 5	15.78	14.97	27.33	2375
Level 6	16.42	15.45	29.82	768

Source: Measurement Services Unit

Chart 7 Means by school level and examination, 1994



Tables 24 and 25 show results in the two Basic Skills papers from 1987 to 1992. Improvements are shown in the two papers over the period although from a very low base in a number of provinces.

Table 24 English Basic Skills performance by province and year, 1987 to 1992

Province	1987	1988	1989	1990	1991	1992	1993	Change (87-92)
Western	12.8	14.5	15.1	14.4	15.7	15.3	15.6	2.5
Gulf	12.9	14.6	14.9	14.7	15.1	15.4	15.9	2.5
Central	14.4	15.8	15.8	15.7	16.3	16.0	16.4	1.6

Milne Bay	15.2	16.4	16.6	16.3	17.2	16.1	16.3	0.8
Oro	13.4	14.9	16.0	15.5	16.8	16.0	16.9	2.6
Southern Highlands	16.3	17.0	17.5	17.6	18.5	17.7	18.0	1.4
Eastern Highlands	15.5	16.2	16.4	16.5	17.3	17.9	17.6	2.3
Simbu	16.0	17.4	17.5	18.3	18.2	18.0	17.9	2.0
Western Highlands	15.0	17.0	16.4	16.8	17.8	18.0	17.8	3.0
Sandaun	12.5	14.2	14.8	14.3	15.5	14.7		2.2
East Sepik	13.1	15.6	15.3	14.8	15.1	15.6	15.7	2.5
Madang	14.4	15.6	16.2	15.7	16.4	17.0	16.1	2.6
Morobe	14.4	15.0	16.2	15.6	16.0	15.5	15.9	1.1
West New Britain	14.0	16.0	16.2	16.2	17.1	17.3		3.3
East New Britain	15.8	18.1	18.1	18.0	18.1	17.8	17.6	2.0
New Ireland	16.2	17.5	17.1	17.6	17.5	17.4	17.7	1.2
North Solomons	14.7	16.6	16.8		16.8	17.2	16.8	2.4
Manus	15.2	17.3	16.8	17.1	17.9	16.6		1.4
NCD	16.8	17.6	18.0	17.1	17.6	17.3	17.6	0.5
Enga	16.4	17.9	17.4	17.9	18.5	18.5	18.9	2.1
Papua New Guinea	14.7	16.2	16.5	16.3	16.9	16.8	16.9	+2.1

Source: Measurement Services Unit

Note: Results from Sandaun, West New Britain and Manus are not available.

Table 25 Mathematics Basic Skills performance by province and year, 1987 to 1992

Province	1987	1988	1989	1990	1991	1992	1993	Change (87-92)
Western	7.5	11.0	12.9	12.5	14.3	14.5	15.9	7.0
Gulf	9.4	11.3	12.5	13.7	14.2	14.9	16.1	5.4
Central	11.9	13.4	14.3	15.2	15.5	16.2	17.3	4.3
Milne Bay	10.6	13.0	14.1	15.3	15.5	16.1	15.7	5.6
Oro	9.4	12.4	13.6	14.8	16.1	16.2	16.9	6.8
Southern Highlands	14.5	15.2	17.5	17.8	19.2	19.4	18.8	4.9
Eastern Highlands	13.6	15.0	16.2	17.1	18.1	19.0	18.3	5.4
Simbu	15.6	18.0	18.6	19.7	19.6	19.4	18.9	3.7
Western Highlands	13.6	16.2	16.8	17.8	18.3	18.6	19.3	5.0
Sandaun	8.8	11.6	12.1	12.8	14.0	14.8		6.0
East Sepik	10.2	13.1	13.7	13.6	14.0	15.2	16.0	5.0
Madang	10.7	13.1	14.7	15.1	15.5	16.1	16.6	5.4
Morobe	12.0	13.1	15.6	15.6	15.9	16.1	15.8	4.1
West New Britain	11.3	13.6	14.8	16.3	17.2	18.4		7.1
East New Britain	13.8	16.9	18.0	18.3	18.4	18.4	18.5	4.6
New Ireland	12.8	14.8	16.1	18.1	16.3	18.1	18.2	5.3
North Solomons	11.8	14.1	15.2		16.2	16.3	17.0	4.5
Manus	12.0	15.5	15.9	17.5	17.6	17.5		5.5
NCD	13.7	15.8	17.4	17.6	17.5	18.2	17.6	4.5
Enga	15.3	17.4	18.5	19.0	20.2	19.7	21.1	4.5
Papua New Guinea	12.0	14.2	15.5	16.2	16.7	17.2	17.4	+5.2

Source: Measurement Services Unit

Note: Results from Sandaun, West New Britain and Manus are not available.

Grade 8 examination

A Grade 8 examination has been in place since 1994. It is called the Certificate of Basic Education Examination, (COBE) and is used by provinces for selection of students to progress into Grade 9. The examination is sat by all children whether they are in Grade 8 in primary schools or high schools. The examination is at present only being used by provinces that have introduced the primary component of the education reform structure.

The structure of the exam is the same as the Primary Education Certificate Examination with two Basic Skills papers (Literacy and Numeracy Skills) and a General Skills paper covering Science, Social Science and Basic Technology.

It is too early to make any meaningful comments on results from this examination and a significant amount of research will need to be done in future years to ascertain how well the children in Grade 8 in primary schools are achieving in comparison with those in the high schools. It needs to be always borne in mind that the children in the high schools will have been selected whilst those in the primary schools will have progressed automatically.

Past interventions

The (World Bank) Education II project was the most significant educational development between 1980 and 1990. It addressed expansion, management and quality. Projects included:

- the provision of advice and training to provinces in educational planning;
- the strengthening of the Community Education Project;
- advice on education resource centres for provinces;
- upgrading examination and assessments;
- the establishment of an evaluation unit to monitor project activities; and
- teacher training.

The Education IV Project with the World Bank is currently:

- assisting with the reissue and distribution of textbooks;
- increasing the number of school inspectors;
- subsidising community school libraries;
- providing maintenance funds for schools; and
- carrying out policy studies on female education.

Despite these projects, there has been little progress in improving retention rates, achievement levels have been static, and management of student flow and teacher appointments have been poor. Female enrolment has not improved. This reflects a need to address the internal efficiency of the program in order to achieve relevant education.

Management

The nineteen provinces and the National Capital District have the authority to administer primary education in the community schools. However, confusion exists over matters, such as the extent of community powers for decision making. This is because community functions have not been adequately recognised or formulated. The level of community involvement has been dropping as communities more and more see their schools as being provincial responsibilities.

The national government provides a large proportion of the funding for primary education—teachers' salaries alone account for more than 90% of expenditure. Provinces are expected to assume a leading role but, primarily because of financial constraints, many have been unable to make much progress toward the ultimate aim of universal primary education. The national government has provided subsidies to provinces on the basis of need through the Community Education Project, although this

has not been particularly successful in relieving imbalances over recent years. Furthermore, within provinces there is often a lack of equity in allocation of funding between districts.

The Free Education policy introduced in 1993 provided a large boost in available funding for community and primary schools. It was originally administered from the national level but has now reverted to provincial control. The policy itself has been much maligned for a variety of reasons and has resulted in a lessening of community involvement in the schools. One advantage, however, has been that, for the first time, some of the most remote schools in the country have had access to money.

2.4 Secondary education

Secondary education has traditionally been split into two - lower secondary being Grades 7 to 10, and Upper Secondary Grades 11 and 12.

2.4.1 Lower secondary

Enrolment

The major problem within the secondary sector has been access. The number of schools in the country has risen considerably since the early 1980s but this has not had the effect of raising the enrolment rate to any great extent. The growth in population has been more than enough to account for the new places being created. Table 26 shows the number of high schools by province in the years 1983, 1988 and 1993.

Table 26 Number of high schools by province, 1983, 1988 and 1993

Province	1983	1988	1993
Western	3	2	2
Gulf	3	4	5
Central	8	8	8
Milne Bay	5	5	7
Oro	2	3	4
Southern Highlands	7	9	9
Eastern Highlands	6	8	8
Simbu	6	7	9
Western Highlands	8	8	9
Sandaun	6	6	7
East Sepik	8	8	8
Madang	4	5	7
Morobe	9	10	10
West New Britain	4	4	5
East New Britain	8	8	9
New Ireland	5	5	5
Manus	3	3	5
North Solomons	5	6	6
NCD	6	6	7
Enga	5	6	6
KLMD	na	2	2
Papua New Guinea	111	123	138

Source: Department of Education

The figures for 1995 have been split up in Table 27 into operating agencies to show the different agencies that operate secondary schools in the country. It should be noted that this table includes both high schools and secondary schools. There are 8 secondary schools in the country—five operated by the Government agency and three by the Catholic agency.

Table 27 Number of high schools by province and agency, 1995

Province	Govt	Cath	UC	Luth	Ang	EA	Others	Total
Western	1					1		2
Gulf	4	1						5
Central	6	1	1					8
Milne Bay	3	2	1		1			7
Oro	3				1			4
Southern Highlands	9	1						10

Eastern Highlands	5			2			1	8
Simbu	7	1		1				9
Western Highlands	6	2		1				9
Enga	6			2				8
Morobe	9			2				11
Madang	2	3		2				7
Sandaun	4	3				1		8
East Sepik	5	3						8
Manus	3	1				1		5
New Ireland	3	1	1					5
NCD	5	2						7
East New Britain	4	2	1					7
West New Britain	5							5
North Solomons	2	3	1					6
KLMD	2							2
Total	94	26	5	10	2	3	1	141

Source: Department of Education

Table 28 is a summary for the whole of Papua New Guinea showing the percentage of schools operated by the different agencies. The Government operate a far greater percentage of schools at the secondary level than they do at primary.

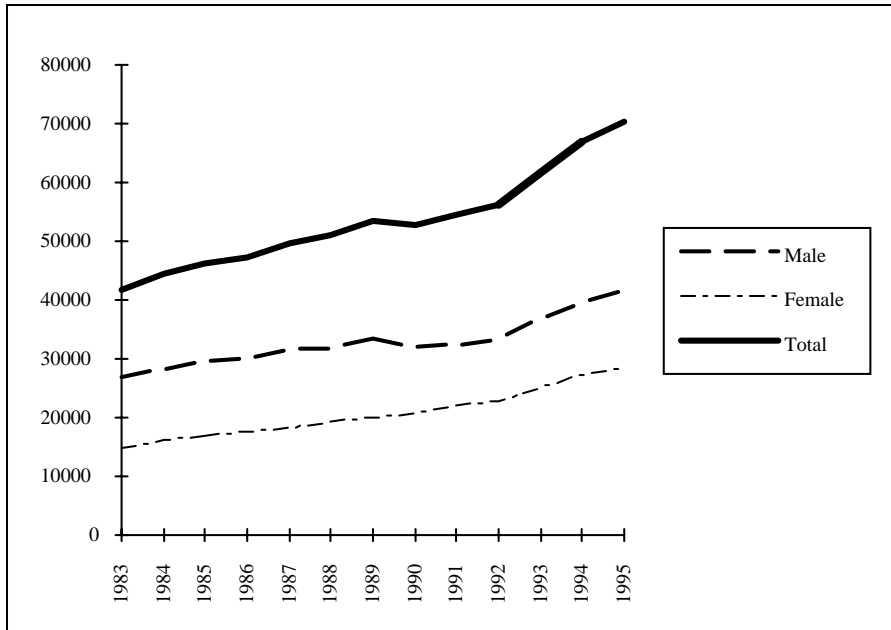
Table 28 Percentage of schools by agency

Agency	No. of schools	%age of total
Government	94	66.7
Catholic	26	18.4
United Church	5	3.5
Lutheran	10	7.1
Anglican	2	1.4
Ev Alliance	3	2.1
Others	1	0.7

Source: Department of Education

Student enrolment rose by about 40% during the 1980s giving an annual Grade 7 enrolment increase of about 4.2%, although this disguises great variations between provinces. Female enrolment has been slowly increasing in provincial high schools. However, by 1989, it still represented only 43.3 percent of total provincial high school enrolments. In general, the coastal provinces have higher rates of female participation although the Eastern Highlands and Simbu provinces have made the greatest advances over recent years.

Chart 8 Total provincial high school enrolment by sex, 1983 to 1995



The transition rate into Grade 7 has remained fairly constant and this has meant that the Secondary Enrolment Rate has not risen a great deal. Only about one in six of the age group were able to be offered a place in Grade 7 before the recent reforms were introduced. Central to the problems of further expanding and making the sector more efficient during the 1980s was the underfunding of the system. The government had not been able to keep pace with the increase in population and had had trouble in adequately funding the sector.

Selection to Grade 7 in the high schools is taken at the provincial level and is based solely on the Primary Education Certificate Examination (PECE). In some provinces there are not enough spaces to cater for the children that reach the 'pass' mark, as recommended by the Measurement Services Unit, in the two basic skills papers of English and Mathematics. This has been a particular problem in the National Capital District. In other provinces, Gulf being the most singular example, there are not enough children with this pass mark to fill the available places. Students who complete Grade 6 within the primary schools progress automatically into Grade 7.

The recent rises have been due to the introduction of Grades 7 and 8 within primary schools. This is illustrated in Charts 9 and 10.

Chart 9 Grade 7 enrolment by type of school

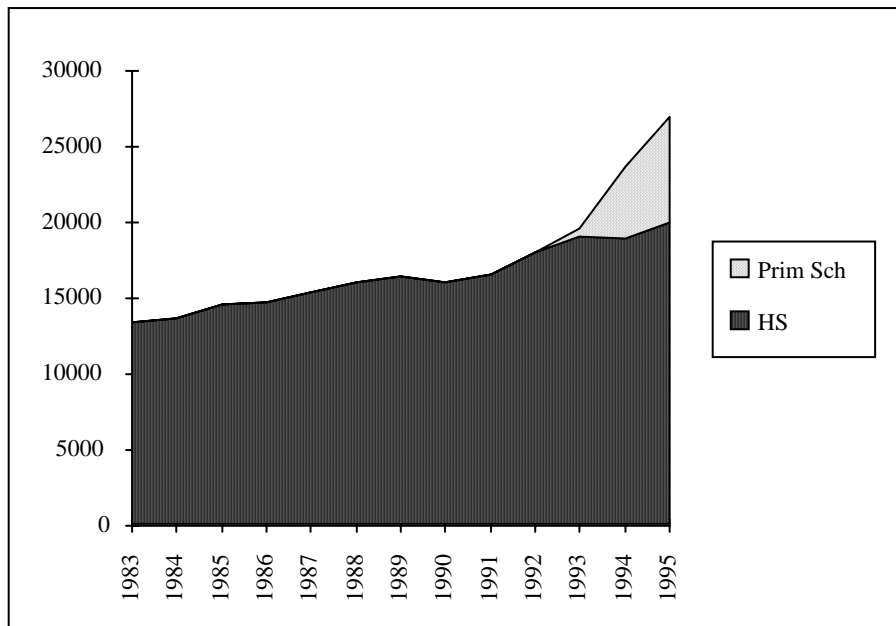
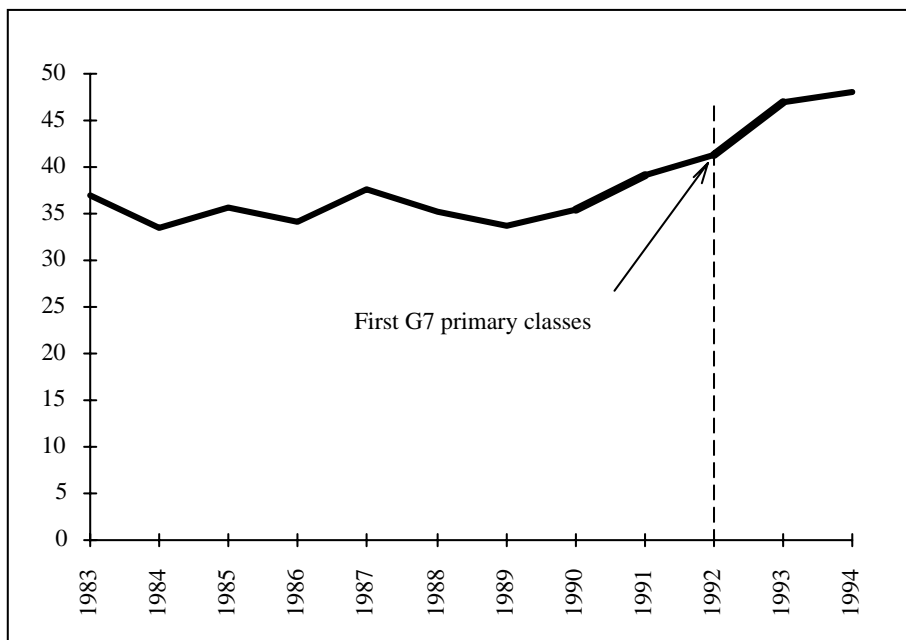


Chart 10 Grade 6 to 7 transition by year, 1983 to 1995



Access

As in primary education enrolment rates are the major measure of access. In this case the Secondary Enrolment Rate is used. This rate is the number of students enrolled in the high schools as a percentage of the 13 to 16 year age group. Table 29 shows the Secondary Enrolment Rate by sex for the whole country. These figures include Grade 7 and 8 classes enrolled at the primary schools.

Table 29 Secondary enrolment rate by sex

	Secondary Enrolment Rate		
	Male	Female	Total
1983	16.4	10.1	13.4
1984	16.9	10.6	13.9
1985	17.4	10.8	14.2
1986	17.4	11.0	14.3
1987	18.1	11.3	14.8
1988	18.0	11.7	15.0
1989	18.8	12.2	15.6
1990	17.6	13.1	15.5
1991	17.4	13.7	15.7
1992	17.5	14.3	15.9
1993	19.1	15.1	17.2
1994	21.3	17.4	19.5
1995	22.9	19.0	21.1

Source: Department of Education

The rate rose slightly during the 1980s, although not as much as might have been expected given the rapid increase in the number of high schools being built. The comparatively sharp rises in the early 1990s can be attributed to the growth in Grade 7 and 8 classes in the primary schools. As with the Gross Enrolment Rate these national figures hide wide differences between the provinces, as illustrated in Table 30 for 1995. The Highlands provinces have noticeably larger discrepancies between the male and female secondary enrolment rates, although these differentials have narrowed over recent years. This is despite the fact many of these province have done away with the quota system for girls selection into Grade 7 that was largely used in 1970s and early 1980s. In general there are larger discrepancies between boys and girls at the secondary level than there are in the primary sector.

Table 30 Secondary enrolment rates by sex and province, 1995

	Male	Female	Total
Western	17.7	16.0	16.4
Gulf	23.1	22.3	22.7
Central	29.3	25.4	27.5
Milne Bay	20.5	22.0	21.2
Oro	25.0	24.7	24.8
Southern Highlands	24.5	18.3	21.6
Eastern Highlands	19.4	12.3	16.3
Simbu	36.9	20.1	29.2
Western Highlands	17.7	12.2	15.3
Sandaun	17.5	12.3	15.2
East Sepik	17.4	14.7	16.1
Madang	23.3	19.7	21.7
Morobe	18.6	13.7	16.3
West New Britain	32.3	28.7	30.7
East New Britain	25.1	24.9	25.0
New Ireland	31.8	31.9	31.8

Manus	48.4	45.6	47.0
North Solomons	14.8	15.4	15.1
NCD	28.8	31.9	30.3
Enga	23.6	17.3	20.7
KLMD	21.9	18.5	21.1
Papua New Guinea	22.9	19.0	21.1

Source: Department of Education

Table 31 shows the percentage of girls selected for Grade 7 in the high schools. The figure has remained at around 40% since the late 1980s. It can be expected that there will be a greater percentage of girls in Grade 7 as the primary school system becomes more established allowing for automatic progression from Grade 6.

Table 31 Percentage of girls selected for Grade 7, high schools, 1983 to 1995

	%age females in Grade 7
1983	36.3
1984	37.5
1985	36.6
1986	37.5
1987	35.9
1988	40.2
1989	38.8
1990	39.3
1991	40.8
1992	40.4
1993	40.6
1994	40.9
1995	39.9

Source: Department of Education

Alternatives to high school education include increasingly large numbers of young people attempting, without success, to complete secondary education through distance studies, and another small group attempting vocational training.

Retention

Retention is not as much of a problem in secondary education as in primary. Approximately 70% of the students that start Grade 7 complete Grade 10. Male students have slightly better retention rates than females. Possible reasons for this could be domestic commitments, marriage, or simply because girls, or their parents, see no value in pursuing their education to a higher level. School fees are often cited as a reason for students dropping out of high school.

The majority of high schools in the 1970s operated a Grade 8 leaver system which meant that only about 70% of students progressed from Grade 8 to 9. This selection was performed on a school by school basis and clearly had an effect on overall retention, or high school completion rates. A number of provinces still operate a Grade 8 leaver system, New Ireland and Morobe amongst them, although the majority have been embarking on programs to 'block up' all of their high schools. Blocking up means that all children that start Grade 7 will have an opportunity to complete Grade 10. The increased blocking up of schools is reflected in the improving retention rates shown in Table 32.

Table 32 High school retention rates by sex, 1983 to 1992 cohorts

	Male	Female	Total
1983 cohort	70.2	67.9	69.4
1984 cohort	71.0	69.1	70.3
1985 cohort	68.9	67.7	68.5
1986 cohort	71.9	65.9	69.7
1987 cohort	65.6	68.5	66.6
1988 cohort	67.0	68.4	67.6
1989 cohort	65.4	69.6	67.0
1990 cohort	71.9	73.8	72.7
1991 cohort	76.8	76.1	76.5
1992 cohort	76.0	79.0	77.2

Source: Department of Education

Table 33 High school retention rates by sex and province, 1992 cohort

	Male	Female	Total
Western	58.9	55.8	57.4
Gulf	57.9	78.4	66.4
Central	68.8	80.2	73.5
Milne Bay	85.3	83.7	84.5
Oro	74.9	93.9	82.8
Southern Highlands	90.0	103.2	94.4
Eastern Highlands	82.4	77.7	80.7
Simbu	74.6	49.2	66.2
Western Highlands	87.8	70.6	80.9
Sandaun	57.8	59.4	58.4
East Sepik	63.9	80.9	70.6
Madang	59.2	88.6	69.2
Morobe	66.1	66.8	66.3
West New Britain	87.8	89.4	88.5
East New Britain	77.8	76.3	77.1
New Ireland	70.2	61.2	65.7
Manus	64.4	69.6	66.7
North Solomons	101.2	104.0	102.6
NCD	91.2	93.0	92.1
Enga	84.3	91.3	86.7
KLMD	86.4	69.2	80.6
Papua New Guinea	76.0	79.0	77.2

Source: Department of Education

Note: The completion rate in the North Solomons is probably due to students continuing their schooling after a break due to the problems experienced on the island. It is unclear why there are such large completion rates in the Southern Highlands Province.

Transition

As has been noted one of the major concerns expressed during the Sector Study was that of access to the upper secondary level of education. The transition rate remained relatively constant throughout the 1980s with recent rises being due to the introduction of Grades 11 and 12 in the Secondary Schools. The only significant increase in numbers during the 1980s was that each of the four National High Schools increased their intakes from 200 to 250. It should be noted that the figures shown in Table 34 do not include those students selected for the Australian Secondary School Scholarship Program (ASSP).

Table 34 Grade 10 to 11 transition by sex and year, 1983 to 1994

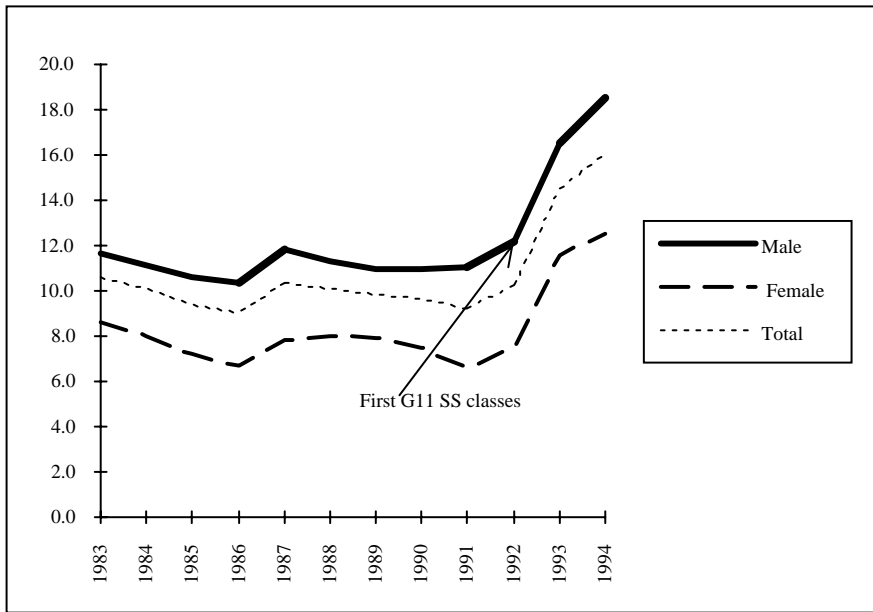
	Male	Female	Total
1983 G10 cohort	11.6	8.6	10.6
1984 G10 cohort	11.1	8.0	10.0
1985 G10 cohort	10.6	7.2	9.4
1986 G10 cohort	10.4	6.7	9.0
1987 G10 cohort	11.8	7.8	10.3
1988 G10 cohort	11.3	7.9	10.1

1989 G10 cohort	10.9	7.9	9.8
1990 G10 cohort	10.9	7.5	9.6
1991 G10 cohort	11.0	6.6	9.2
1992 G10 cohort	12.1	7.5	10.3
1993 G10 cohort	16.5	11.5	14.5
1994 G10 cohort	18.5	12.5	16.0

Source: Department of Education

Chart 11 illustrates the enormous impact that the introduction of Secondary Schools have had on transition into Grade 11.

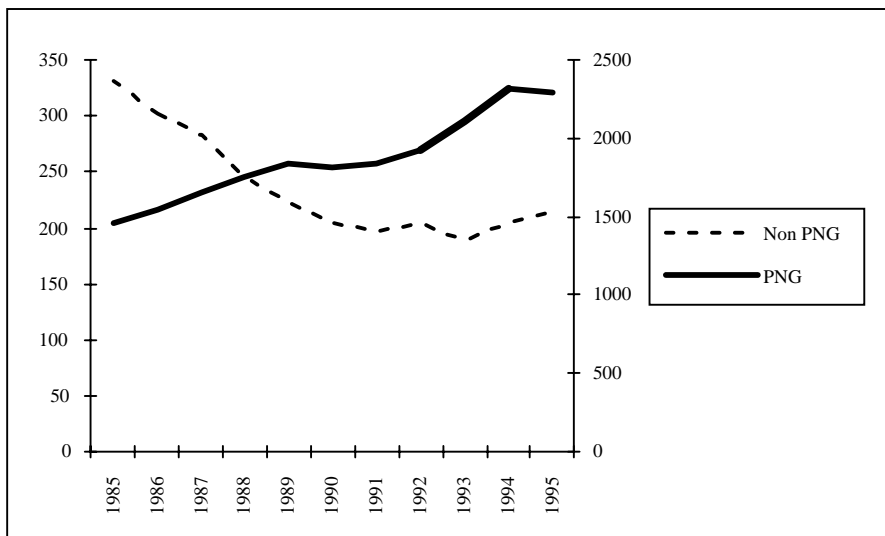
Chart 11 Grade 10 to 11 transition by sex, 1983 to 1994



Staffing

Chart 12 shows the number of teachers, both Papua New Guinean and non Papua New Guinean for the years 1985 to 1995. (Note: In all charts and tables in this section, the term High School is used to mean both Provincial High Schools and Secondary Schools).

Chart 12 High school staffing by PNG or non PNG



The figures conceal the fact that not all teachers in the high schools are fully qualified. There are a number of community school qualified teachers and also graduates without teaching qualifications. Table 35 shows the number of high school teachers by sex from 1983 to 1995.

Table 35 Papua New Guinean high school teachers by sex, 1983 to 1995

	Male	Female	Total	%age female
1983	919	358	1277	28.0
1984	954	420	1374	30.6
1985	1035	429	1464	29.3
1986	1070	480	1550	31.0
1987	1135	521	1656	31.5
1988	1174	580	1754	33.1
1989	1233	605	1838	32.9
1990	1214	600	1814	33.1
1991	1287	552	1839	30.0
1992	1303	624	1927	32.4
1993	1417	695	2112	32.9
1994	1582	734	2316	31.7
1995	1651	802	2453	32.7

Source: Department of Education

The localisation rate has increased over the period 1985 to 1995, although it has been constant for the last year or so. This may be due to the initiatives at the Grade 11 and 12 level in the secondary schools. There are insufficient qualified Papua New Guineans at present to fill all positions and so there may have been an increased reliance on overseas contract or volunteer teachers.

Table 36 High school localisation by year, 1985 to 1995

Year	%age Papua New Guinean
1985	82%
1986	84%
1987	85%
1988	88%
1989	89%
1990	90%
1991	90%
1992	90%
1993	92%
1994	92%
1995	94%

Source: Department of Education

Teacher pupil ratios

Staff are deployed, supposedly, at the rate of 1.5 teachers per class. This means that if classes are of 40, the teacher pupil ratio will be approximately 1 to 26. This figure has remained fairly constant over the period although it should be stressed that a number of provinces are significantly overstaffed. In 1995 it

was estimated that there were about 80 teachers more than required in the provincial high schools and secondary schools.

As high schools have started offering Grades 11 and 12 the formula for calculating the number of staff that should be in schools has altered somewhat. Schools should have 1.75 staff for each Grade 11 and 12 class.

Table 37 High school teacher ratios by province, 1992 to 1995

Province	1992	1993	1994	1995
Western	28.2	23.4	19.0	24.0
Gulf	25.0	24.5	29.1	29.1
Central	24.7	26.7	28.7	25.3
Milne Bay	34.6	28.3	26.2	25.1
Oro	31.0	28.2	26.7	37.0
Southern Highlands	22.6	32.1	28.0	30.2
Eastern Highlands	25.5	22.6	25.5	25.5
Simbu	27.7	26.4	23.7	22.5
Western Highlands	21.4	26.7	28.9	25.7
Sandaun	34.4	24.4	35.7	25.8
East Sepik	27.8	29.5	30.8	26.7
Madang	27.6	23.3	22.1	20.4
Morobe	24.2	26.2	28.2	27.4
West New Britain	25.3	27.4	26.1	23.5
East New Britain	25.6	19.8	24.7	25.6
New Ireland	24.7	29.6	26.6	27.5
Manus	31.9	31.9	24.3	27.1
North Solomons	33.9	30.7	35.4	28.1
NCD	28.4	28.3	27.4	28.4
Enga	24.2	29.9	25.6	33.5
KLMD	25.8	23.9	21.7	21.5
Papua New Guinea	26.4	26.9	26.6	26.5

Source: Department of Education

Quality

The Measurement Services Unit administers the Grade 10 examination each year. This is known as the School Certificate Examination. Examinations are set in the four core subjects—English, Mathematics, Science and Social Science. These exams are conducted in October of each year. There is also a Written Expression Examination earlier in the year which counts towards the English grade. Grades are awarded on the basis of both examination performance and a school based assessment program. The results of these examinations are used for selection purposes. Grades are awarded in the following manner.

Distinction	Top 5%
Credit	Next 20%
Upper Pass	Next 25%
Pass	Next 40%
Fail	Bottom 10%

Tables 38 and 39 show the Mean Rating Index (MRI) by province and subject for 1995, and by province for the years 1987 to 1995. The Mean Rating Index is the percentage of candidates who have achieved either a Distinction, Credit or Upper Pass. 50% of candidates achieve this and so any MRI over 50 can be considered better than average.

As is noted each year in the School Certificate Examination Report, '*Papua New Guinea has a wide variety of high school and differences in standards should be expected.*'. This is also true when comparing provinces. As has already been seen there are wide differences in access opportunities into high school because some provinces take a smaller percentage of students than do others.

Table 38 Mean Rating Index by province and subject, 1995

Province	No. of Schls	No. of cand.	Eng	Maths	Sci	SS	M.R.I.
Western	4	398	54.27	44.47	48.99	49.50	49.31
Gulf	5	295	31.86	23.39	23.73	27.80	26.69
Central	9	796	44.60	39.32	36.06	34.80	38.69
Milne Bay	7	676	62.28	48.52	46.45	50.30	51.89
Oro	4	400	36.50	21.25	27.50	33.50	29.69
Southern Highlands	9	1066	34.62	55.16	45.12	44.09	44.75
Eastern Highlands	9	802	67.33	67.21	66.08	67.46	67.02
Simbu	8	732	49.59	62.84	71.72	60.66	61.20
Western Highlands	9	956	55.22	72.76	71.40	72.44	67.95
Sandaun	7	404	56.68	61.63	60.40	62.13	60.21
East Sepik	8	694	48.99	51.87	51.73	51.15	50.94
Madang	7	827	50.18	51.75	51.03	51.87	51.21
Morobe	11	975	58.87	51.69	54.67	57.85	55.77
West New Britain	5	499	40.88	42.28	38.68	40.08	40.48
East New Britain	8	904	63.50	54.09	53.32	56.86	56.94
New Ireland	5	448	51.79	40.85	46.43	43.53	45.65
North Solomons	5	504	48.02	37.50	35.12	40.08	40.18
Manus	4	332	38.86	42.17	38.86	37.05	39.23
NCD							
Enga	6	534	38.39	55.06	54.31	51.31	49.77

Source: Measurement Services Unit

Note: School results for NCD were calculated from previous years results

Table 39 Mean Rating Index by province, 1987 to 1995

Province	1987	1988	1989	1990	1991	1992	1993	1994	1995
Western	33.11	25.55	29.54	33.42	30.79	33.39	36.62	42.68	49.31
Gulf	30.16	34.15	32.94	28.03	22.22	27.84	30.12	28.14	26.69
Central	35.87	43.36	41.41	38.47	43.15	42.55	44.26	37.56	38.69
Milne Bay	49.61	44.17	53.85	52.55	58.63	52.13	58.19	47.97	51.89
Oro	54.40	39.91	43.87	47.37	53.87	46.75	46.06	34.27	29.69
Southern Highlands	46.98	44.82	48.06	50.21	52.15	44.95	51.07	50.92	44.75
Eastern Highlands	62.15	68.26	60.61	62.96	56.64	61.13	57.37	59.33	67.02
Simbu	60.63	60.83	55.05	57.27	54.07	54.51	57.03	48.29	61.20
Western Highlands	51.68	58.49	55.13	60.68	66.37	65.56	58.40	64.30	67.95
Sandaun	42.61	47.44	43.94	54.69	49.92	52.87	52.55	52.50	60.21
East Sepik	51.80	43.38	45.10	42.84	49.40	50.20	47.42	35.38	50.94
Madang	48.78	43.24	45.92	48.03	48.03	45.88	45.69	49.94	51.21
Morobe	48.42	41.40	41.40	42.99	40.75	40.84	48.52	49.82	55.77
West New Britain	45.83	56.50	40.61	47.11	48.11	50.98	40.79	38.16	40.48
East New Britain	48.85	48.83	49.91	51.31	49.42	53.24	48.46	51.54	56.94
New Ireland	43.08	46.17	44.45	47.56	48.49	48.11	47.43	53.88	45.65
North Solomons	57.15	50.84	62.95		36.93	41.60	41.17	40.07	40.18
Manus	65.63	61.48	61.76	57.51	46.89	44.31	34.43	39.23	39.23
NCD	60.20	56.10	59.89	58.43	52.31	52.62	63.02	67.45	59.76
Enga	56.09	51.41	49.29	51.68	55.40	55.04	54.25	52.55	49.77

Source: Measurement Services Unit

Financing

Lower Secondary education has traditionally been a provincial responsibility. There has however been large differences in levels of support between provinces. The extremes have been Central Province, who provide little or nothing in terms of support for students in its high schools, to New Ireland who

provided grants of up to K300 per student. These differences in subsidies meant that there was also a large difference in the amount of school fees charges between provinces.

The Free Education policy was introduced in 1993 to get rid of such differences but really failed in its objective of taking the weight of paying school fees off the parents' backs. Schools simply introduced 'project' fees instead of school fees and a number of provinces cut back, or even eliminated, provincial subsidies.

Management

The nineteen provinces and the National Capital District have the authority to administer secondary education from Grades 7 to 10. The national government, however, provides a large proportion of the funding for secondary education—teachers' salaries alone account for a large part of expenditure. Provinces are expected to assume a leading role but, primarily because of financial constraints, many have been unable to make much progress toward the expansion of access. The various church agencies have the responsibility for the maintenance of their own schools.

Past Interventions

The Education III (World Bank) project was the most significant development between 1984 and 1988. It has assisted with the building of new schools and maintenance of existing school facilities, school-level management, and curriculum design. Projects included the provision of educational planning advice and training to the provinces, the strengthening of teacher training courses at Goroka Teachers' College, institutional capacity building, upgrading of examinations and assessments, and major capital programs. Despite these projects, a substantial number of students are still lost between the grades. Females constitute a high proportion of the students who do not complete secondary schooling, and they form only about 40% of the total high school enrolment.

2.4.2 Upper secondary education

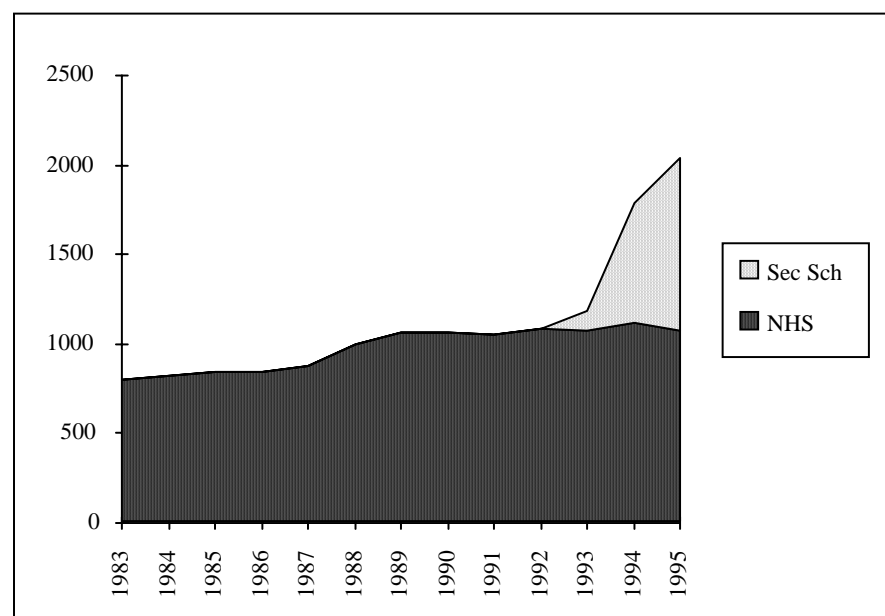
Grades 11 and 12 had been offered solely in the National High Schools, administered by the National Department of Education, until the recent Secondary School program was started.

Access

The problem of access into Upper Secondary education—Grades 11 and 12, is even more pronounced than that of access into Grade 7. There were only four National High Schools until 1996. Passam National High School opened in 1978, and was the last such institution to be constructed until the opening of the Port Moresby National High School in February, 1996. The only increase in access to Grade 11 during the intervening period has been an intake rise from 200 to 250 in each of the four schools, and the introduction of the Australian Secondary School Scholarship Program (ASSSP) that catered for about 200 students per year. There are also a small number of students benefiting from a similar scheme operated in New Zealand by the New Zealand Overseas Development Association (NZODA).

The introduction from 1993 of Secondary Schools - Provincial High Schools offering Grades 11 and 12 - has dramatically increased access opportunities. It is the intention of Government that there be one such school in each province. Meanwhile, the ASSSP is being phased out because of these new initiatives. Grade 11 students by type of school is shown in the Chart 13.

Chart 13 **Enrolment in Grade 11, 1983 to 1995, by type of school**



The number of females participating in upper secondary education has also been distressingly low. In the National High Schools only about 30% of students have been girls. It is expected that female participation will improve with the opening of Secondary Schools in the provinces offering Grades 11

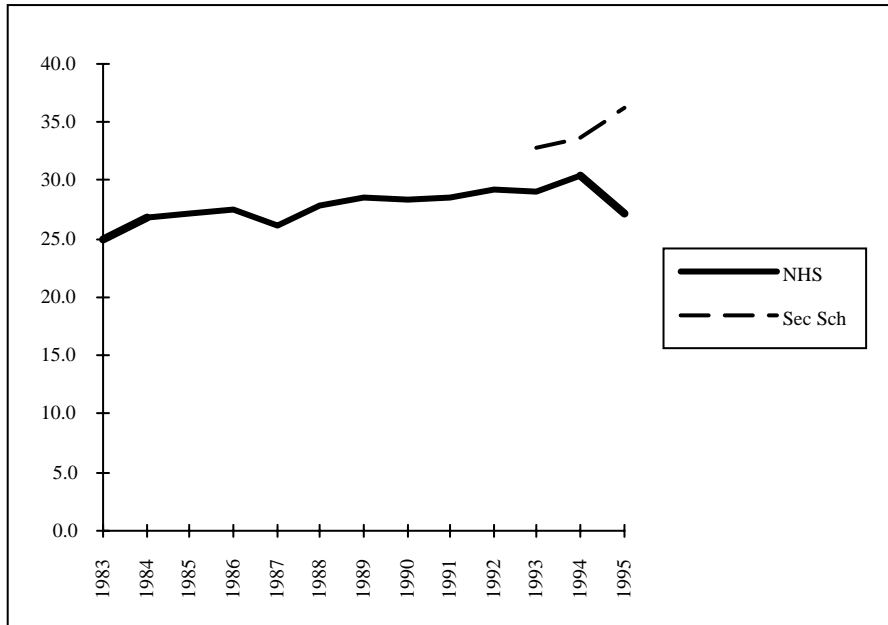
and 12. The ASSSP has ensured that 50% of those benefiting from this program are girls which has in a small way helped the problem. Table 40 shows the percentage of girls entering Grade 11 in either the National High Schools or the Secondary Schools and Chart 40 shows a comparison between the two types of school. The percentage appears to be rising although it is still not satisfactory.

Table 40 Female percentage enrolment in Grade 11, 1983 to 1995

	%age female
1983	24.9
1984	26.8
1985	27.2
1986	27.5
1987	26.1
1988	27.8
1989	28.5
1990	28.4
1991	28.6
1992	29.2
1993	29.4
1994	31.8
1995	31.5

Source: Department of Education

Chart 14 Female percentage enrolment in Grade 11, 1983 to 1995, by type of school



Retention

Retention is not considered a problem in the Upper Secondary sector with only about 5% dropping out in Grades 11 and 12. Table 41 shows these by year and sex. The figures are for mid year and so the figures shown will be slightly higher than the true figures.

Table 41 Upper secondary retention, 1983 to 1994 cohorts

	Male	Female	Total
1983 cohort	98.5	95.4	97.7
1984 cohort	98.3	95.9	97.7
1985 cohort	96.8	93.5	95.9
1986 cohort	98.7	94.3	97.5
1987 cohort	98.7	94.1	97.5
1988 cohort	98.6	97.8	98.4
1989 cohort	94.4	98.6	95.6
1990 cohort	95.0	95.1	95.0
1991 cohort	98.7	94.0	97.4
1992 cohort	99.7	94.9	98.3
1993 cohort	98.5	98.0	98.3
1994 cohort	98.6	95.4	97.6

Source: Department of Education

Staffing

Staffing has remained constant in the National High Schools with a continued heavy reliance on overseas, predominantly contract, labour. It is encouraging though that there have been some signs of improvement in localisation over the period.

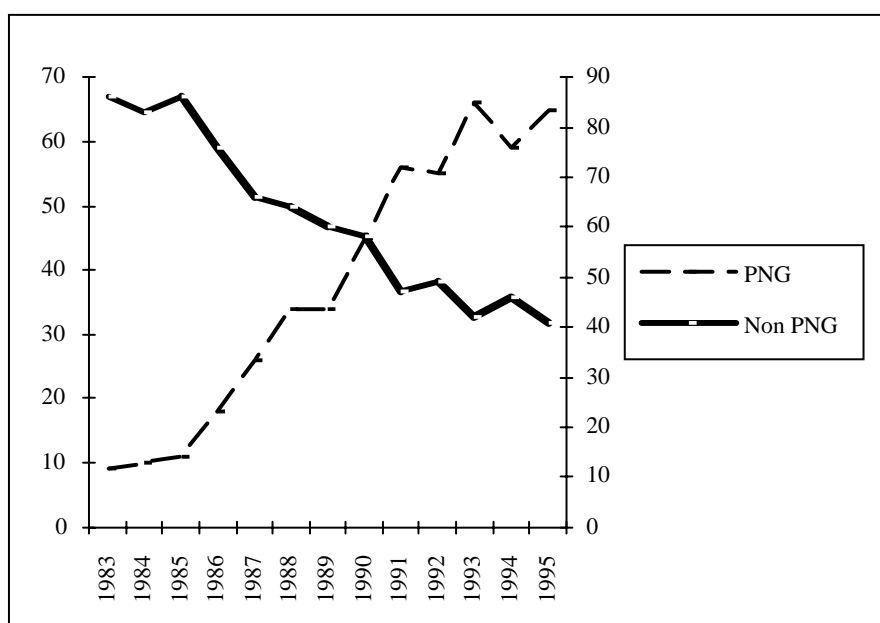
Table 42 and Chart 15 show the number of Papua New Guineans, non Papua New Guineans and the localisation rate by year from 1983.

Table 42 National High School staffing by nationality and localisation rate

	PNG	Non PNG	Total	Loc'n
1983	9	86	95	9.5
1984	10	83	93	10.8
1985	11	86	97	11.3
1986	18	76	94	19.1
1987	26	66	92	28.3
1988	34	64	98	34.7
1989	34	60	94	36.2
1990	45	58	103	43.7
1991	56	47	103	54.4
1992	55	49	104	52.9
1993	66	42	108	61.1
1994	59	46	105	56.2
1995	65	41	106	61.3

Source: Department of Education

Chart 15 National High School staffing by PNG and non PNG



Teacher pupil ratio

The teacher pupil ratio has been constant at about 1 to 18.5. Teachers are allocated to schools at the rate of approximately 1.75 per class. Recommended class size is 30 in Grades 11 and 12. Table 43 shows teacher pupil ratios, 1992 to 1995.

Table 43 **Teacher pupil ratios, 1992 to 1995**

	Tchr/pupil ratio
1992	18.9
1993	18.5
1994	19.0
1995	17.0

Source: Department of Education

Financing

The National High Schools have always been relatively well off, in comparison with the other secondary schools, with considerable grants from the National Department. These amounted to about K1000 per student as well as other grants such as maintenance and ancillary staff provided as public servants. The unit costs of the National High Schools are, then, very high. These costs are made even higher when airfares for students are included.

2.5 Vocational Education

Vocational education has long been the poor relation of the education scene in Papua New Guinea. Vocational centres are seen by many as being second class high schools. Most of the vocational centres established in the country are located in rural areas and many are mission agency initiatives. In contrast to other areas of the education system there are many single sex institutions amongst the vocational centres. Their training programs are oriented towards the improvement of living conditions and traditional agriculture, the needs of small rural workshops, the handicraft sector, the possibilities of self-employment in informal economic activities and, particularly in urban areas, for employment in the private sector.

The problems of the vocational centres are many and varied but revolve around the low status in which they are held. A selection of major problems that have affected the centres and that were identified by the Sector Study are:

- their terminality. The system does not allow for vocational centre graduates to move on in the education system, for example to technical colleges;
- the lack of a national curriculum, standard assessment systems and certification. Each centre produces its own certificates which may have local acceptance but are not recognised nationally;
- the low priority placed on centres by provincial governments. This is one reason why the church agencies administer a large number of the centres and why many centres are characterised by poor teaching facilities and equipment;
- the lack of adequate teacher training opportunities. This is a particular problem for male instructors and has led, inevitably, to a shortage of qualified teaching staff. The majority move into teaching from a trade background and many never undergo formal teacher training;
- wide disparities in the quantity and quality of vocational education, with the level of skills of graduates not comparable between centres, and not up to the standard required to operate effectively within a given trade; and
- there is little linkage between vocational training and the needs of the labour market.

Enrolment

Despite the many problems noted enrolment has, however, continued to rise over the years and there are a number of fine examples of vocational centres around the country. Policies vary from province to province regarding the age of entry into vocational centres, but the majority of students enrolling are Grade 6 leavers who have spent a year or so in the village. As the education reform proposals become implemented, increasingly more students entering the centres will be Grade 8 leavers.

The number of centres by province in years 1983, 1988 and 1993 is shown in Table 44.

Table 44 Vocational centres by province, 1983, 1988 and 1993

Province	1983	1988	1993
Western	4	2	2
Gulf	4	4	4
Central	3	4	4
Milne Bay	6	6	6
Oro	5	6	5
Southern Highlands	4	5	4
Eastern Highlands	1	3	5
Simbu	1	2	3
Western Highlands	6	7	7
Sandaun	7	8	19
East Sepik	6	6	7
Madang	3	4	5
Morobe	6	7	7
West New Britain	3	2	4
East New Britain	7	8	8
New Ireland	4	4	5
Manus	2	2	2
North Solomons	4	4	0
NCD	6	7	7
Enga	1	6	7
KLMD	na	2	2
Papua New Guinea	83	99	113

Source: Department of Education

The number of vocational centres by province and operating agency for 1995 are shown in Table 45.

Table 45 Vocational centres by province and agency, 1995

	Govt	Cath	UC	Luth	Ang	EA	Others	Total
Western	2							2
Gulf	3							3
Central	3	1						4
Milne Bay	3	4	1					8
Oro	4	1						5
Southern Highlands	4							4
Eastern Highlands	3	1						4
Simbu	1	3						4
Western Highlands	2	4						6
Enga	4	2				2		8
Morobe	6	3						9
Madang	3	2						5
Sandaun	7	8					2	17
East Sepik	4	1				1	1	7
Manus	1	1						2
New Ireland	1	4						5

NCD	4	1					1	6
East New Britain	3	4	1					8
West New Britain	1							1
North Solomons								0
KLMD	2							2
Total	61	40	2	0	0	3	4	110

Source: Department of Education

Table 46 is a summary for the whole of Papua New Guinea showing the percentage of vocational centres operated by the different agencies.

Table 46 Percentage of vocational centres by agency

Agency	No of schools	%age of total
Government	61	55.5
Catholic	40	36.4
United Church	2	1.8
Lutheran	0	0.0
Anglican	0	0.0
Ev Alliance	3	2.7
Others	4	3.6

Source: Department of Education

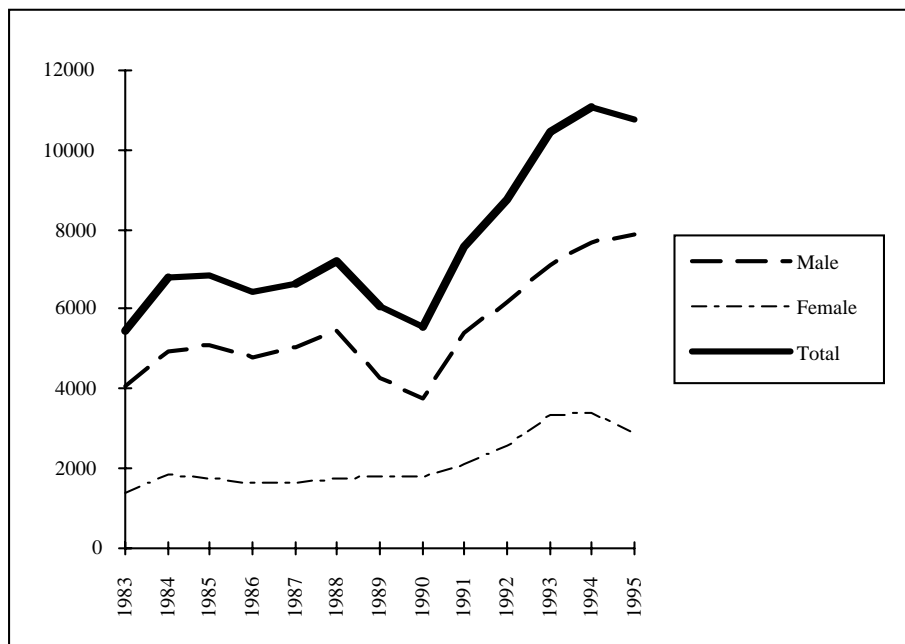
Enrolments have been characterised by dramatic fluctuations and irregular intake patterns. These fluctuations possibly reflect the fact that provinces do not see vocational education as being a priority area.

Female participation has not been particularly good in vocational centres as shown in Chart 16. The best Vocational Centres for girls tend to be church-run and single-sex institutions.

There is great variation in the size of vocational centres. There are a number of large, usually urban, centres that are able to offer a number of courses of study but the majority are very small and cater for a narrow range of subjects. The average vocational centre enrolment is only about 80 and there are some centres that are open one year and closed the next. The size of a lot of the centres is going to make the reform proposal of converting vocational centres into Vocational Secondary Schools very difficult.

Vocational centre students have mainly been Grade 6 school leavers, many of whom have to spend a year or two at home before satisfying the minimum enrolment age requirement of sixteen years. This minimum age varies from centre to centre - there are no national policies in this regard. A number of vocational centres offer College of Distance Education (CODE) courses in addition to the vocational subjects. Some students who have progressed through this course of study proceed to apprenticeships and universities, although very few make it back successfully to the main stream of formal education.

Chart 16 Total vocational centre enrolment by sex, 1983 to 1995



Apart from the CODE courses, vocational education has had no linkages with any other part of the education system. It is this lack of articulation with any other part of the system that has led at least partially to the low regard in which vocational centres are held.

It is expected that the profile of vocational centre students will change as the reform proposals are put into place. Grade 8 will be the major leaving point for students under the reform proposals and it is envisaged that students will proceed directly from Grade 8 to the Vocational Secondary Schools. The Certificate of Basic Education Examination will be used for selection purposes.

Retention

Retention between years at Vocational Centres is not particularly meaningful in that different provinces have different policies regarding the length of course and entry requirements. There is, however, anecdotal evidence that there are large drop out rates.

Transition

Transition rates are also difficult to judge in that students do not automatically move from one level of education into the vocational centres. If, however, an assumption is made that only Grade 6 leavers enrol at the centres and they enrol two years after completing Grade 6 a rate can be deduced. Table 47 shows the number in year one in the vocational centres as a percentage of the group of Grade 6 'leavers'—defined as being those that were not in Grade 7 in the following year—of two years earlier.

Table 47 Vocational centre year one enrolments as a percentage of the previous Grade 6 leavers

	Transition to Voc Centre		
	Male	Female	Total
1983 Gr 6 leavers	25.5	11.0	19.1
1984 Gr 6 leavers	0.0	0.0	0.0
1985 Gr 6 leavers	24.0	8.2	16.5
1986 Gr 6 leavers	16.1	8.2	12.4
1987 Gr 6 leavers	15.1	8.7	12.1
1988 Gr 6 leavers	18.6	9.1	14.2
1989 Gr 6 leavers	20.7	10.1	15.7
1990 Gr 6 leavers	23.8	14.0	19.4
1991 Gr 6 leavers	26.4	12.9	20.1
1992 Gr 6 leavers	25.6	12.0	19.5

Source: Department of Education

Figures for the 1984 Grade 6 leavers are not available.

Although there is no transition rate as such it can be said that there are vocational centre places available for about 20% of the boys and 10% of the girls who have not been offered a Grade 7 place. This is one area of the system where girls would appear to be at a disadvantage.

Staffing

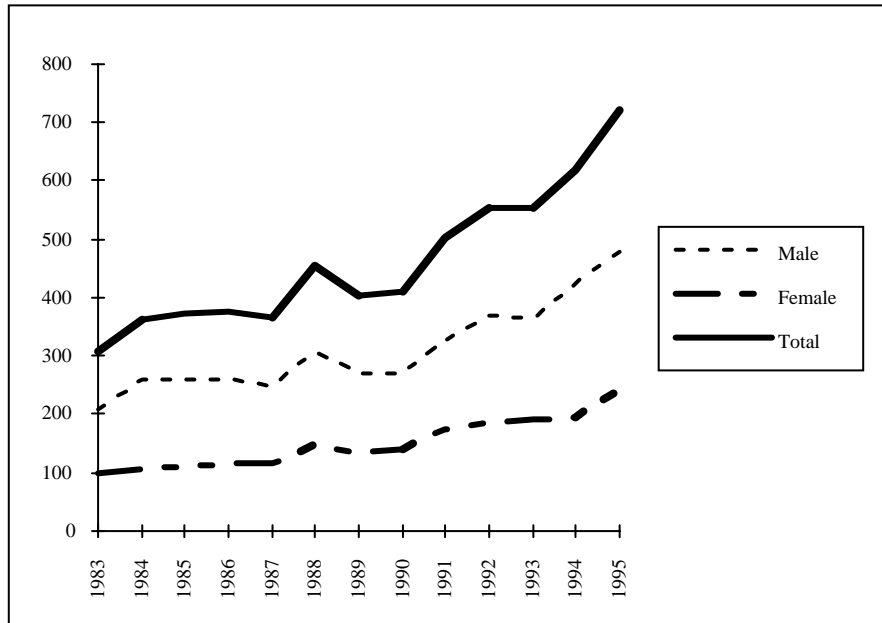
The staffing situation in vocational centres is shown in Table 48 and Chart 17. Many of the male staff do not have teaching qualifications. It is not envisaged under the reform proposals that there will be any great increase in the overall number of trade instructors. The increases in staffing that will occur within the vocational sector will be general subject teachers.

Table 48 Vocational Centre staff by sex, 1983 to 1995

	Male	Female	Total
1983	209	99	308
1984	258	104	362
1985	261	110	371
1986	260	116	376
1987	248	116	364
1988	309	147	456
1989	270	133	403
1990	269	141	410
1991	328	175	503
1992	370	184	554
1993	365	190	555
1994	424	194	618
1995	477	244	721

Source: Department of Education

Chart 17 Vocational Centre staff by sex, 1983 to 1995



The proportion of women in the vocational centres is a rather different issue than in the other sectors. This is because female instructors teach the girls and male instructors teach the boys. The figure has remained constant over the years as shown in Table 49. This reflects the percentage of girls enrolled within the centres.

There continues to be a number of expatriate instructors within the vocational centres and the centres are further from full localisation than are the high schools.

Table 49 Percentage of female vocational centre staff by sector, 1983 to 1995

	%age female
1983	32.1
1984	28.7
1985	29.6
1986	30.9
1987	31.9
1988	32.2
1989	33.0
1990	34.4
1991	34.8
1992	33.2
1993	34.2
1994	31.4
1995	33.8

Source: Department of Education

Instructor student ratios

The accepted ratio is 1 instructor for every 15 students. This varies enormously throughout the country but the figure has kept slightly above this in recent years. Table 50 shows national figures from 1983 to 1995 with the more recent years by province in Table 51.

Table 50 Vocational centre instructor ratios, 1983 to 1995

	M	F	T	PT ratio
1983	209	99	308	17.8
1984	258	104	362	18.8
1985	261	110	371	18.4
1986	260	116	376	17.1
1987	248	116	364	18.1
1988	309	147	456	15.7
1989	270	133	403	15.0
1990	269	141	410	13.5
1991	328	175	503	15.0
1992	370	184	554	15.8
1993	365	190	555	18.9
1994	424	194	618	17.9

Source: Department of Education

Table 51 Vocational centre instructor ratios by province, 1992 to 1995

Province	1992	1993	1994	1995
Western	17.3	9.1	7.9	12.7
Gulf	17.7	16.2	33.1	7.8
Central	12.6	17.0	18.7	10.9
Milne Bay	15.6	19.1	15.7	17.4
Oro	19.1	15.9	15.6	14.5
Southern Highlands	6.6	7.8	10.3	8.6
Eastern Highlands	14.9	20.8	14.2	14.2
Simbu	95.0	37.0	13.8	16.2
Western Highlands	15.0	20.7	17.2	15.0
Sandaun	17.0	17.6	17.6	16.1
East Sepik	12.6	27.9	19.5	14.8
Madang	20.0	22.8	20.1	15.0
Morobe	16.3	15.7	19.5	23.8
West New Britain	24.8	21.5	25.7	22.6
East New Britain	15.2	23.0	19.9	19.8
New Ireland	13.5	14.4	15.3	11.3

Manus	12.5	14.3	13.9	10.2
North Solomons				
NCD	17.2	18.0	21.0	13.8
Enga	10.5	28.1	12.1	8.5
KLMD	20.0	22.2	18.2	14.1
Papua New Guinea	15.8	18.9	17.9	15.7

Source: Department of Education

There are also differences in teacher instructor ratios for male and female teachers. Table 52 shows the male and female ratios by province for 1995. The assumption made in developing this table is that only male instructors teach boys and female instructors teach girls.

Table 52 Vocational centre instructor student ratios by sex, 1995

Province	Male	Female	Total
Western	12.4	14.0	12.7
Gulf	6.7		7.8
Central	9.8	14.8	10.9
Milne Bay	19.1	15.9	17.4
Oro	15.6	9.0	14.5
Southern Highlands	10.1	3.3	8.6
Eastern Highlands	13.9	14.5	14.2
Simbu	16.5	15.8	16.2
Western Highlands	18.3	5.9	15.0
Sandaun	16.5	15.5	16.1
East Sepik	18.1	8.4	14.8
Madang	15.1	14.7	15.0
Morobe	30.0	10.7	23.8
West New Britain	26.1	15.7	22.6
East New Britain	22.6	15.8	19.8
New Ireland	12.8	9.6	11.3
Manus	11.4	7.0	10.2
North Solomons			
NCD	17.3	9.6	13.8
Enga	8.5	8.5	8.5
KLMD	15.3	10.8	14.1
Papua New Guinea	17.4	12.3	15.7

Source: Department of Education

Past interventions

Significant external assistance was provided by a New Zealand Government grant of K500,000 which commenced in 1983. Management was a problem because of the absence of a political framework governing vocational centre training, and a lack of any clear administrative authority over the development of its centres. Vocational training was subsumed under non-formal education and it may be possible that much of the funding was swamped by non-formal education when it was transferred to the Ministry of Home Affairs and Youth. A more recent intervention has been made by GTZ, a German aid organisation. GTZ is attempting to establish six model centres around the country.

Financing

Vocational centres have remained the poor relations in terms of finance as well as everything else. In many provinces they received very little financial support. Many were reliant upon their own income generating projects to allow them to operate.

Management

The National Department of Education is responsible for inspections, grants-in-aid, and the training of vocational centre instructors. Provincial education authorities are responsible for the administration of the centres and curriculum assessment.

It is unfortunate that in the past many provinces have put so little emphasis on vocational education that few have any relevant expertise employed in a managerial capacity in the provincial education divisions. In many cases the vocational centres have been put together with non-formal education and

presided over by the Non Formal Education Officer, who would also have responsibility for literacy. This officer will rarely have vocational centre experience. In recent years a number of provinces have appointed Vocational Centre Coordinators in recognition of the fact that they have neglected centres in the past.

The Secondary Inspector (formerly Regional Secondary Inspector) has had a great deal of influence in the provinces regarding high schools. However, support for vocational centres has not been forthcoming due to the very few Vocational Inspectors in the field. Those that there are would usually have a number of provinces to look after.

2.6 Technical education

Introduction

Technical education provides skills training in technical and technological skills. Training develops adaptable, broad-based, analytical and creative skills and involves industries in program planning and teaching. Courses are offered at both certificate and diploma levels.

Technical training is biased towards meeting the needs of industry and commerce. The needs of the community at large have so far not been adequately addressed in Papua New Guinea. The reform upgrades the Pre-Employment Technical Training (PETT) program to a 2 year Technical Training Certificate (TTC) program, which will have an academic equivalence of grade 12.

There are 1145 places available within Technical and Business Colleges to students who wish to undertake Pre-Employment Technical Training courses. Of these places, 418 (forty percent) are available for female students. Maximum use of existing technical college facilities would accommodate approximately 1800 students.

Access to technical and business colleges is determined during the national selection process and intakes consist of Grades 10 and 12 students, who have selected PETT courses and who have attained the required grades in the core subject areas. Twenty-five percent of places at present exist for either company or self-sponsored students who satisfy the enrolment criteria.

More than sixty percent of students entering technical and business colleges are males. Of the thirty-five percent of females who enrol in technical education, most undertake secretarial, stenography and clerical courses. Very few females enter the male dominated trade courses.

Four levels of courses are offered:

Pre-Employment Technical Training (PETT) courses are offered in the various trade areas over thirty or forty week periods every year. These courses provide the basic skills necessary for students to gain formal employment in industry and commerce, and are a prerequisite for apprenticeable trades. A Pre-Employment Technical Training Certificate is issued on successful completion of the trade course.

Apprenticeship Extension courses are conducted in the various trade areas by two to three blocks release courses of eight weeks per block over a period of two and three years respectively. These courses provide advanced skills training required by industry to obtain trade certification issued by the Department of Labour and Employment.

Diploma courses are run in the Mechanical, Electrical, Civil and Building areas of engineering. Science Technology, Business Studies, and Hotel and Catering areas of the commerce sector also offer diploma courses. These courses provide advanced training for skilled employees who are seeking advancement within their specific trades. The courses are conducted in blocks of twenty weeks, over a four year period, and a diploma is issued on completion.

Special courses are run on demand by industrial, commercial, and community organisations with special training requirements. The timing and duration of the courses are set in agreement with the certifying college, which issues attendance certificates to successful students. It is generally accepted that the courses which are offered meet the requirements of industrial and commercial organisations, and to a limited extent, the community at large.

There are, however, growing concerns that:

- the curriculum needs to be revised and updated in line with changes in technology;
- access for female students to traditionally male dominated courses has not helped to increase the enrolment rate of females;

- the method of selection is biased towards the core subjects, although practical skills is also considered;
- the present structure does not cater for the needs of the community; and
- students trained by the technical education system cannot directly enter higher tertiary institutions, although an accreditation system is currently being prepared for discussion and decision.

The National Manpower Assessment forecasted the manpower training needs for the period 1981-1991. This forecast has been accepted as a policy guideline, and has been used to formulate proposals for the expansion of staffing, training, and resource development in many different areas. The combined effect of these policy changes was to:

- increase the age of students entering technical colleges;
- restrict the output of students from technical colleges to the estimated manpower needs of the work force; and
- improve the quality and marketability of graduate students.

PETT courses were introduced after the phasing out of technical college courses for Grade 9 and Grade 10 students, and were for students who had completed Grade 10, but had not yet entered the work force. The courses provide one year of training in a particular trade area, and on completion, students are qualified to seek employment as apprentices.

Apprenticeship courses have changed dramatically since 1975. At that time, apprentice training consisted of four blocks, each lasting six weeks. However, students who graduated from Grade 10 were only required to complete the last two blocks of training. This system was questioned by employers. They questioned whether, by comparison with international standards, the maximum requirement of twenty-four weeks training was sufficient. By 1982, with the implementation of the Asian Development Bank (ADB) Project for the development of technical education, most apprentices had to complete a forty-week PETT course, and attend technical college for sixteen or twenty-four weeks during their apprenticeship before earning a Trade Certificate. Technician training, now diploma, courses were for technicians who had already gained a reasonable understanding of the theoretical and practical requirements of their jobs.

Prior to the ADB Project, students were selected by their employers to attend a twelve week course. This was followed by a period of industrial work experience, and two additional twelve week courses. The present system of training involves the sponsorship of a student by an employer for twenty weeks over three successive years. The employer must also provide the student with a period of industrial work experience between courses.

A curriculum evaluation and development exercise, partly funded by the World Bank under the First Education Project, assisted in upgrading the quality and appropriateness of the technician training courses. Short and part-time courses are now offered to provide training for students who wish to acquire additional trade skills to enhance their technical skills development. These courses are quite popular.

Given this scenario, it is imperative to:

- increase the number of graduates and personnel with technical skills;
- update curricula;
- provide adequate teaching equipment, materials and facilities;
- train teachers; and

- update and improve resources.

This includes the provision of education for minority and special needs groups, the improvement of education in rural areas, increasing the participation of girls and women in all courses, and emphasising continued education and youth guidance.

Enrolment

Enrolments in the four types of courses are shown in Table 53. Statistics have not been consistently collected and so it can be a little difficult to compare year on year.

Table 53 Technical college enrolments by type of course, 1983 to 1995

	PETT			Part time			Diploma			Extension		
	M	F	Total	M	F	Total	M	F	Total	M	F	Total
1983	1343	592	1935			0	170		170	727		727
1984	1210	571	1781			0	142		142	1086		1086
1985	1173	514	1687			0	386		386	924		924
1986	1099	408	1507			0	134		134	913		913
1987	874	474	1348		335	335	157		157	564		564
1988	916	367	1283		391	391	264		264	512		512
1989	824	400	1224		558	558	206		206	83		83
1990	625	418	1043	35	395	430	249	11	260	347	1	348
1991	712	435	1147	170	401	571	127	4	131	506	0	506
1992	722	460	1182	86	240	326	231	8	239	807	13	820
1993	662	422	1084	246	614	860	202	11	213	656	2	658
1994	674	430	1104	63	307	370	113	6	119	459	1	460
1995	648	386	1034	119	291	410	232	17	249	311	1	312

Source: Department of Education

Notes: 1 1983 to 1986 part time enrolment included with PETT figures
 2 Until 1990 PETT figures were not presented by gender. It has been assumed that only female students were enrolled on the secretarial and steno courses.

The percentage of women has improved slightly over the period in PETT courses as shown in Table 54 but there are still very few on courses other than the traditional secretarial and allied courses.

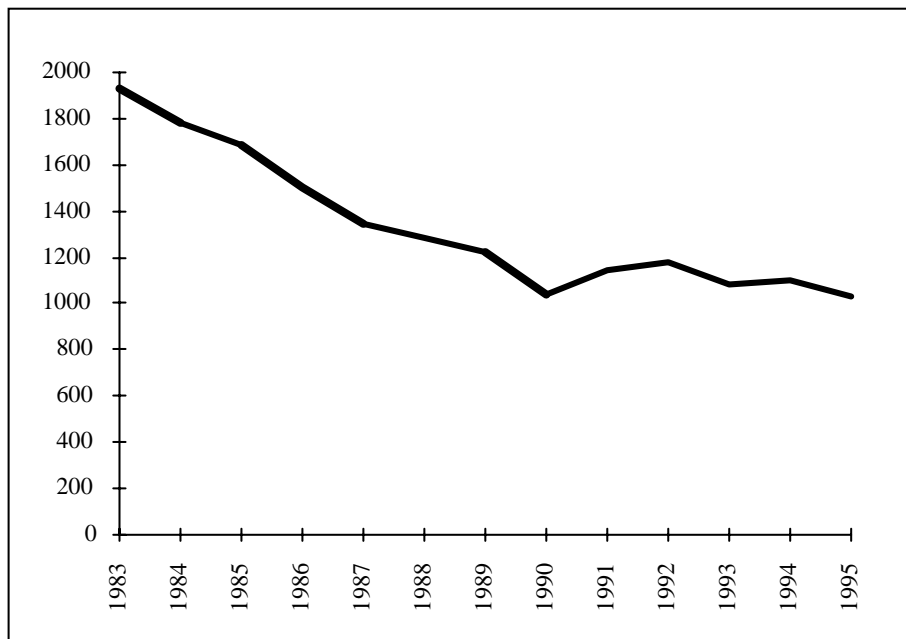
Table 54 Percentage of female students enrolled on PETT courses, 1983 to 1995

	%age female
1983	30.6
1984	32.1
1985	30.5
1986	27.1
1987	35.2
1988	28.6
1989	32.7
1990	40.1
1991	37.9
1992	38.9
1993	38.9
1994	38.9
1995	37.3

Source: Department of Education

PETT course enrolments have been dropping since the early 1980s as shown in Chart 18. These figures are, however, distorted slightly by the fact that part time enrolment was included with the PETT figures. Nevertheless, the number of places has dropped leading to an inefficient utilisation of college facilities. The decline of the enrolment rate can be partly attributed to the enrolment ceiling imposed on technical education. The drop in 1990 can be attributed to the closure of Arawa Technical College as a result of the problems experienced on Bougainville during the late 1980s.

Chart 18 Enrolments in PETT programs, 1983 to 1995



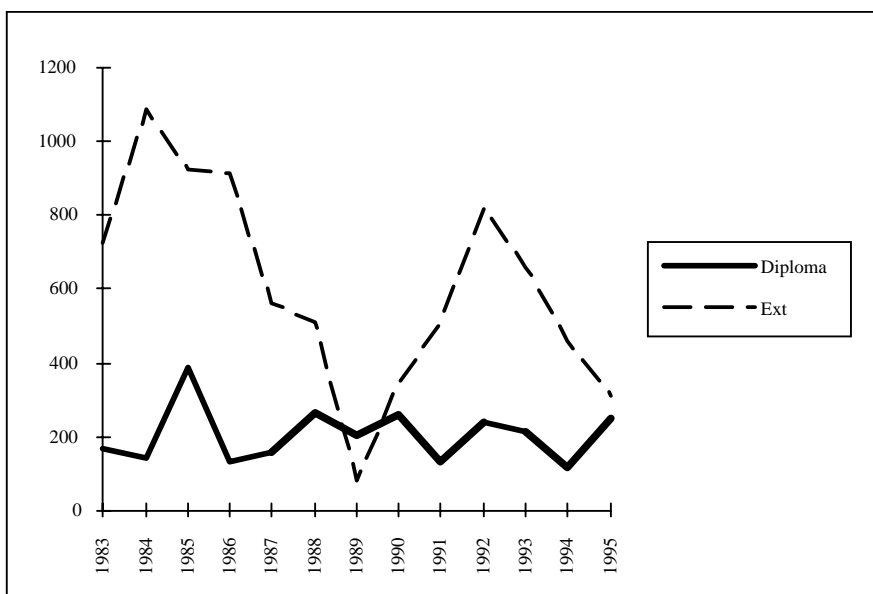
Note: No enrolment was recorded for part time between 1983 and 1986

The major feature of the apprenticeship program has been the low enrolment rate with 200 or fewer students in 1975, 1978, and 1989. The average yearly enrolment for extension courses between 1990 and 1995 has been 645. The enrolment in 1990 was 346 students, rising to above 800 between 1991 and 1994. The 1995 enrolment dropped to 561. This drop could be attributed to teaching staff shortages in some trade/subject areas which resulted in the cancellation of some courses, and the budgetary constraints which forced the Works Department not to send their apprentices for courses.

Enrolment in the diploma program fluctuated markedly until 1987, but numbers had generally improved and stabilised by 1990 as shown in Chart 19. Except for the lowest enrolment of 131 students in 1991, the enrolment in Technician program is marked by low, but stable pattern of enrolment. The yearly average enrolment between 1990 and 1995 is 228.

Enrolment in other areas has been characterised by large fluctuations. This is illustrated in the chart below showing enrolments in the diploma and extension courses.

Chart 19 Enrolments in diploma and extension programs, 1983 to 1995



Staffing

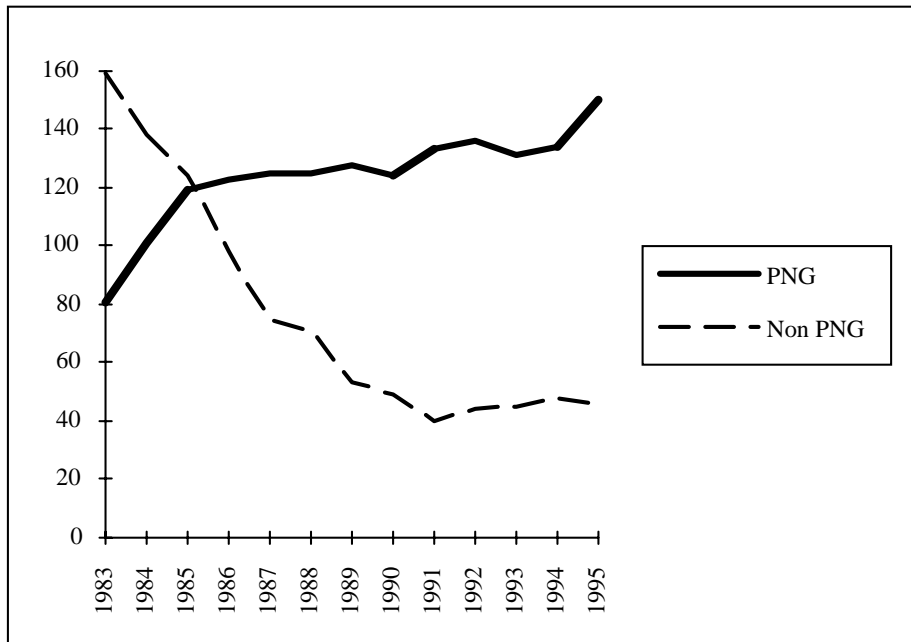
Staffing in the technical colleges has dropped over the years as numbers in the colleges have dropped. Progress has been made towards localising the lecturers within the colleges as shown in Table 55 and chart 20 but still approximately 1 in 4 lecturers are overseas officers. These lecturers tend to be in the higher level courses suggesting that the terms and conditions are not sufficient to attract suitable Papua New Guineans.

Table 55 Technical college staffing by gender and status, 1983 to 1995

	PNG			Non PNG			Total			Loc'tion
	M	F	Total	M	F	Total	M	F	Total	
1983	50	31	81	130	29	159	180	60	240	33.8
1984	67	34	101	116	22	138	183	56	239	42.3
1985	79	40	119	106	18	124	185	58	243	49.0
1986	88	35	123	83	15	98	171	50	221	55.7
1987	88	37	125	66	9	75	154	46	200	62.5
1988	87	38	125	63	8	71	150	46	196	63.8
1989	92	36	128	47	6	53	139	42	181	70.7
1990	86	38	124	44	5	49	130	43	173	71.7
1991	93	40	133	37	3	40	130	43	173	76.9
1992	98	38	136	42	2	44	140	40	180	75.6
1993	94	37	131	43	2	45	137	39	176	74.4
1994	101	33	134	43	5	48	144	38	182	73.6
1995	112	38	150	40	6	46	152	44	196	76.5

Source: Department of Education

Chart 20 **Staffing by status, 1983 to 1995**



The future

The fundamental aim of technical education is to provide training in adaptable, broad-based, analytical and creative skills. This training will simultaneously increase female participation in male dominated trades, involve industry in program planning and teaching, modernise facilities, develop programs for entrepreneurial and skills training in managerial technology, and provide for the handling of new materials and technology. Technical teacher training will be restructured and in the foreseeable future continue being offered at UPNG Goroka Campus. This may be reviewed if a more appropriate alternative institution is considered.

Programs for the expansion of technical education in Papua New Guinea will be based on the establishment of the Institute of Technical Education (ITE), the linking of programs with vocational education, and the inclusion and development of a two-year Technical Training Certificate (TTC) course.

The aims of these two-year courses are to:

- prepare students for entry into the work force with multi skills training;
- provide access to Diploma programs; and articulation opportunities to other higher level courses; and
- provide self-employment opportunities.

Technical education will effectively communicate with the Ministry of Industrial Relations through their respective bodies to upgrade apprenticeship training by:

- establishing two-way communication with industry, commerce and the community, and providing relevant programs to enhance employment opportunities; and
- improving the quality and efficiency of programs by rationalisation.

It is the responsibility of the Technical Education Division to guarantee the provision of physical and human resources to meet these objectives.

The plan for the development of technical education is supported by the commitment to provide education for the whole community, create more formal employment opportunities, and offer higher education to meet Papua New Guinea's manpower needs. The aim is to facilitate the development of people over the age of sixteen by increasing their technological knowledge and teaching adaptable, broad-based, analytical and creative skills.

Major policy instruments include the relocation of the Institute of Technical Education (ITE) in the administrative hierarchy, registration of private training institutions as permitted schools for the monitoring and certification of available courses, rationalisation of technical colleges through the Home Colleges project and the development of the two-year technical training certificate program.

The teacher pupil ratio will be 1:15 and the entrance qualification will be the completion of Grade 10.

An Institute of Technical Education (ITE) will be established and linked with vocational education. A two-year Technical Training Certificate (TTC) course will be developed to prepare students for entry into the work force, provide opportunities for articulation into higher level programs and to provide self-employment opportunities. The technician program will be upgraded to meet the technological needs of industry as well as strengthening links with higher education institutions. Two-way communication with the industrial and commercial sectors and the community at large will be established. Programs will be rationalised by developing specialised trade courses at each of the existing colleges.

Upgrading will include the replacement of existing buildings, the construction of additional buildings and the replacement of obsolete machinery with modern industrial quality models. The curricula will be revised and updated in line with changes in modern technology.

Female students will have equal access to all courses. Selection criteria will be based on course requirements and the applicant's qualifications, not gender. Wherever possible, practical or other related subjects will be considered. Certification of courses may be extended to those permitted institutions which conduct technical training of a similar nature and standard.

3 TEACHER SUPPLY

This section outlines the structures, functions and guidelines for the development of teacher education for Elementary, Technical, Vocational, Primary and Secondary Teacher programs where they relate to the functions of general education.

3.1 General Policies

Teacher Training strategies within the National Higher Education Plan from which this section was developed are:

- tertiary institutions shall have a Governing Council accountable to the Commission for Higher Education for formulating college policy; and
- teachers colleges will be accountable to the Office of Higher Education (OHE) for effective operation of their colleges

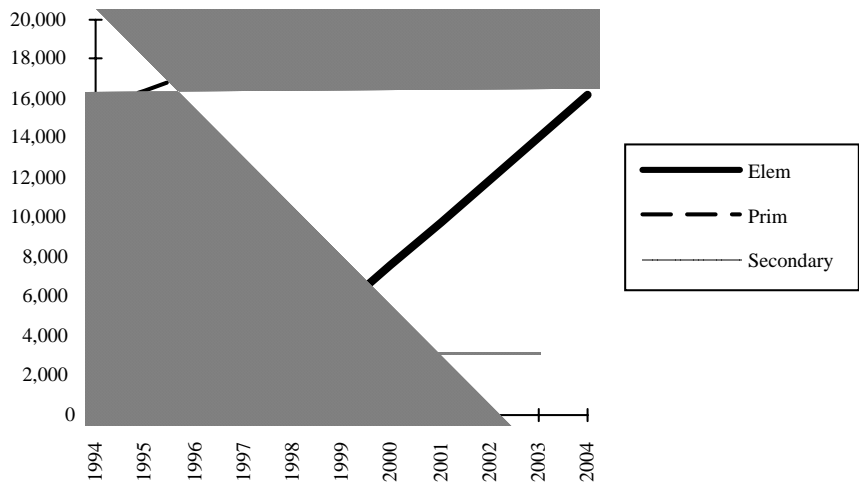
In terms of the sub-sector's requirements;

- college principals shall be accountable for institutional productivity and be given sufficient power to influence it;
- students are expected to study diligently and perform community service;
- scholarships will be withdrawn at the discretion of Governing Councils in the case of unmotivated and irresponsible students;
- the provision of a three-year high-quality preservice primary school teacher education program;
- students other than those on Certificate courses will, eventually, come directly from grade 12;
- an increased proportion of students will be women; and
- institutions will maintain and enhance quality.

Over the plan period the great expansion in teacher numbers will be at the elementary level. It is envisaged that there will be little or no increase in secondary teacher requirements and that there will not be significant increase at the primary level. This is because of the shift of Grade 7 and 8 classes into the primary schools, and Grades 1 and 2 into the elementary schools. Teacher requirements are illustrated in the chart below, based upon projections made during the Resource Study.

Chart 21 Teachers by sector

Teachers by sector



3.2 Elementary teacher training

Introduction

Papua New Guinea needs a cadre of trained elementary teachers who are competent in providing initial literacy and early education in a language which the children speak, providing an activity-based, integrated curriculum in a multi-grade context. The country will require about 16,000 elementary teachers in order to fully implement the reform proposals.

None of the existing teachers' colleges have developed programs specifically geared to elementary education. A range of extremely different courses is currently offered by various groups for the training of Tok Ples Pre Skuls (TPPS). These can be as short as two weeks and deal with teaching, syllabus writing and materials production. The educational background of the participants varies just as widely, with teachers with less than Grade 6 qualification to more than Grade 10. None of these courses provides national recognition for elementary teaching.

Teachers at this level will be trained through a nationally recognised, modular, non-campus based elementary teacher education course with linkages to other national teacher education programs. The program will incorporate the strengths of the existing Tok Ples Pre Skul system and provide a national system of teacher education, certification and registration.

The future

Table 56 shows the number of teachers, by grade, required over the plan period.

Table 56 Number of teachers by grade, 1995 to 2004

	Prep	E1	E2	Total
1995	27	15	0	42
1996	384	27	15	426
1997	1 100	384	27	1 512
1998	1 815	1 100	384	3 300
1999	2 531	1 815	1 100	5 446
2000	3 246	2 531	1 815	7 593
2001	3 962	3 246	2 531	9 739
2002	4 677	3 962	3 246	11 886
2003	5 393	4 677	3 962	14 032
2004	6 108	5 393	4 677	16 179

Source : Resources Study, 1995 (updated)

The number of teachers in training by year is shown in Table 57. If these targets are not achieved there will be a flow on effect throughout the system affecting the cost effectiveness of the whole education reform process. This will be particularly severe in the primary teacher education sector.

Table 57 Teachers in training, 1995 to 2004

	Teachers in training
1995	42
1996	426
1997	1 497
1998	3 258
1999	5 020
2000	6 081

2001	6 439
2002	6 439
2003	6 439
2004	6 439

Source : Resources Study, 1995 (updated)

The Department will, through the Field Services Unit of the Port Moresby Inservice College, provide training for the teachers. Elementary teachers will be nominated by the communities in which they will work, and candidates must have gained a good secondary education certificate. Teachers will work for half a day, five days a week.

Existing TPPS teachers wishing to teach in Elementary Schools will be given provisional restricted registration by the TSC provided that they enrol for Elementary Teacher Provincial Training. Training will be conducted in three phases over a period of about three years during school breaks. There will be a minimum of 300 hours of tuition in each year. Training will be carried out at the Provincial and District level. This is cost effective and enables community participation.

3.3 Primary teacher training

This section discusses programs to improve the quality and quantity of primary teacher education.

Introduction

Teacher education programs will provide an adequate supply of well-trained, innovative and self-reliant teachers committed to the education of individual children, and to their own professional development. They will be equipped to teach throughout the primary school system.

It is to be hoped that over the plan period the following objectives can be achieved. These objectives, relating to quantity and quality, are to:

- strengthen the three year program, and include preparation of teachers to take Grades 7 and 8;
- upgrade content knowledge of lecturers;
- upgrade management capabilities of senior college staff;
- devise innovative alternative modes of delivery for primary teacher education, both preservice and inservice;
- rationalise and upgrade teacher education facilities;
- redevelop the preservice program in accordance with the National Accreditation Policy;
- restructure the inservice program in line with the education reform; and
- redefine the role of the Division of Staff Development and Training consistent with its incorporation into the higher education sub sector.

Primary teacher education will continue to be a cooperative effort between the government and church education agencies. A variety of modes of delivery of preservice and inservice teacher education courses will be developed. The entry level will be raised to Grade 12 and the proportion of female teachers increased.

Enrolment

Primary teacher education is conducted in eight community teachers' colleges, seven of which are run by the churches and one, Madang, by the government. These colleges have until recently ensured that Papua New Guinea trained, certificated and registered the number of primary school teachers required by the national education system. The entry requirement for Primary Teacher Training is a minimum of four upper passes in Grade 10. Until 1990, a two year certificate in Primary Teacher Education was offered. In 1991, however, a three year Diploma program was introduced in an effort to upgrade content knowledge, pedagogical skills, and the status of primary teachers. Simultaneously, a reduction of about one third of student teacher intake occurred. This is shown in Table 58 and Chart 22.

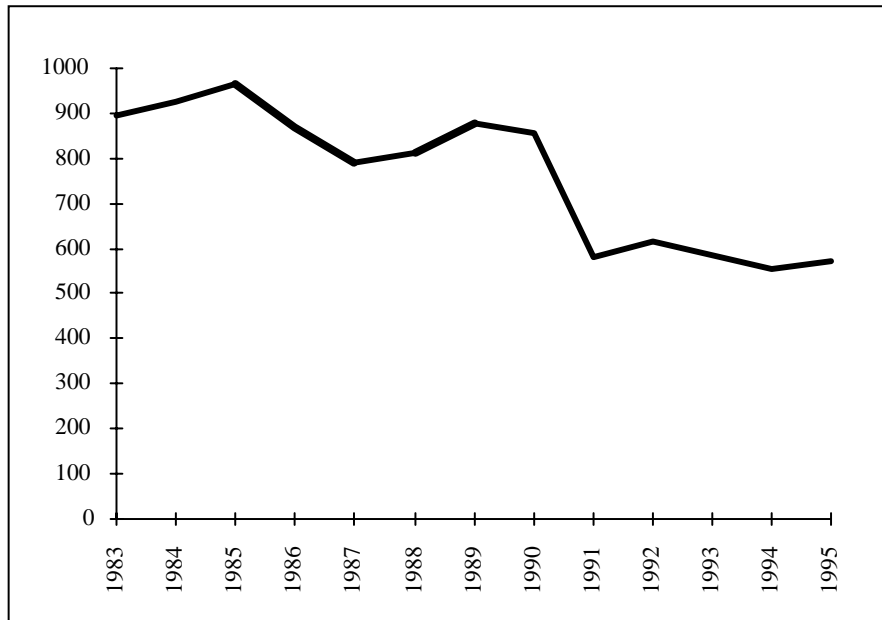
Table 58 Enrolment by year and sex, teachers colleges, 1983 to 1995

	Year 1			Year 2			Year 3			Total		
	M	F	T	M	F	T	M	F	T	M	F	T
1983	521	373	894	489	341	830			0	1010	714	1724
1984	555	373	928	490	353	843			0	1045	726	1771
1985	604	361	965	437	330	767			0	1041	691	1732
1986	494	374	868	560	341	901			0	1054	715	1769
1987	484	305	789	439	342	781			0	923	647	1570
1988	512	302	814	447	283	730			0	959	585	1544
1989	542	335	877	471	278	749			0	1013	613	1626
1990	504	352	856	488	317	805			0	992	669	1661
1991	310	273	583	471	303	774			0	781	576	1357

1992	329	285	614	291	258	549			0	620	543	1163
1993	329	256	585	308	279	587	268	251	519	905	786	1691
1994	310	246	556	322	252	574	296	264	560	928	762	1690
1995	299	293	592	298	259	557	318	251	569	915	803	1718

Source : Department of Education

Chart 22 Entrants in teacher training programs 1983 to 1995



The percentage of females in the community school teachers colleges has remained constant throughout the 1980s at approximately 40% although there have been encouraging rises in recent years, as shown in Table 59.

Present projections show a deficit between the supply and demand for primary school teachers. On present capacity, the colleges could graduate about 500 teachers per annum. This produces a shortage in the early years of the plan period but is sufficient, in fact producing a surplus, in future years. Any analysis of the situation is dependent upon the introduction of elementary education as an integral part of the implementation plan. **If there is any slippage in elementary implementation it will flow through the system with potentially disastrous consequences on teacher supply and demand at the primary level.**

Table 59 Females as a percentage of total enrolment in teachers colleges, 1983 to 1995

	%age female
1983	41.4
1984	41.0
1985	39.9
1986	40.4
1987	41.2
1988	37.9
1989	37.7
1990	40.3
1991	42.4
1992	46.7
1993	46.5

1994	45.1
1995	46.7

Source : Department of Education

There will be a rationalisation of the teachers colleges carried out to better utilise the facilities available. There is unused capacity in some colleges due to the lack of sufficient Natscols being offered. Some teacher training colleges have room for expansion or are willing to allow non-residential training.

Retention

As in all sectors of the education system the question of student attrition is a concern. Table 60 suggests that approximately 8% of students, on average, are lost between Year 1 and Year 2, and a further 5% between Years 2 and 3. There does not appear to be a significant difference between male and female attrition. It is unclear why there is a retention rate greater than 100 for the 1994 cohort. Maybe some students were reinstated or took leave for a year?

Table 60 Teachers college retention rates, 1983 to 1995

	Year 1 to 2			Year 2 to 3		
	M	F	T	M	F	T
1983 cohort	94.0	94.6	94.3			
1984 cohort	78.7	88.5	82.7			
1985 cohort	92.7	94.5	93.4			
1986 cohort	88.9	91.4	90.0			
1987 cohort	92.4	92.8	92.5			
1988 cohort	92.0	92.1	92.0			
1989 cohort	90.0	94.6	91.8			
1990 cohort	93.5	86.1	90.4			
1991 cohort	93.9	94.5	94.2	92.1	97.3	94.5
1992 cohort	93.6	97.9	95.6	96.1	94.6	95.4
1993 cohort	97.9	98.4	98.1	98.8	99.6	99.1
1994 cohort	96.1	105.3	100.2			

Source : Department of Education

Staffing

There is a total of 129 academic as well as non-academic staff in the teachers colleges. Out of a heavily expatriate academic staff in the early eighties, national lecturers and administrators now represent more than seventy percent of the professional staff. This is testimony to the success of the Lecturer Development Project. This is shown in Table 61 and Chart 23.

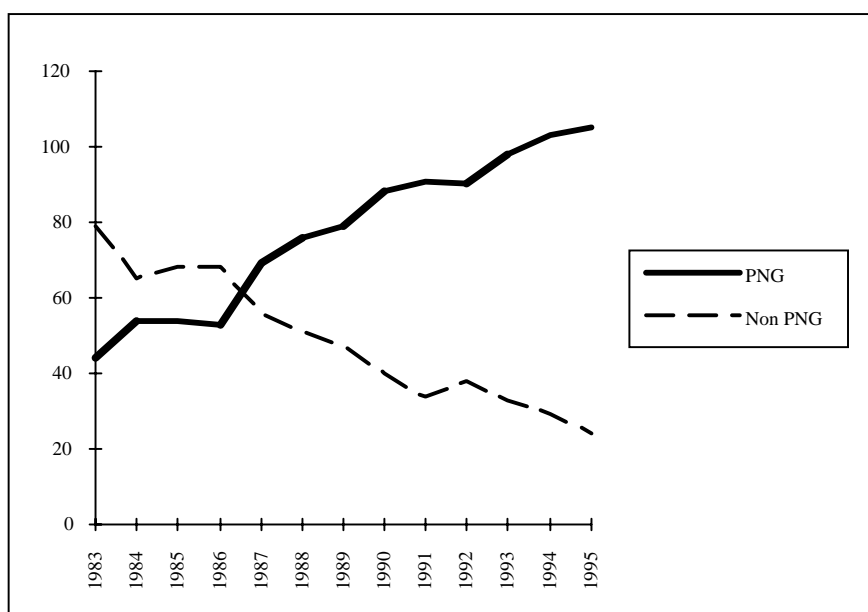
Table 61 Teachers college staff by gender and status, 1983 to 1995

	PNG			Non PNG			Total			Loc'tion
	M	F	Total	M	F	Total	M	F	Total	
1983	34	10	44	44	35	79	78	45	123	35.8
1984	43	11	54	35	30	65	78	41	119	45.4
1985	42	12	54	37	31	68	79	43	122	44.3
1986	39	14	53	34	34	68	73	48	121	43.8
1987	54	15	69	31	25	56	85	40	125	55.2

1988	65	11	76	22	29	51	87	40	127	59.8
1989	68	11	79	22	25	47	90	36	126	62.7
1990	73	15	88	20	20	40	93	35	128	68.8
1991	75	16	91	20	14	34	95	30	125	72.8
1992	76	14	90	20	18	38	96	32	128	70.3
1993	87	11	98	17	16	33	104	27	131	74.8
1994	92	11	103	14	15	29	106	26	132	78.0
1995	90	15	105	15	9	24	105	24	129	81.4

Source : Department of Education

Chart 23 Teachers college staffing by PNG or non PNG



A tertiary level professional support mechanism is now required, in line with the improved qualifications of the staff, the Diploma level course, and the intention to raise the entry level to Grade 12.

Past interventions

Past interventions in the development of primary teacher education have included the implementation of the Lecturer Development Program; and a three year course leading to the award of a diploma.

The Lecturer Development Program (1991 – 1995) was a split campus program involving the Queensland University of Technology in Brisbane and the University of Papua New Guinea. This program was designed for both serving lecturers without first degrees and new recruits to the teachers colleges. This program led to the awarding of first degrees in Education.

The three year program, to supersede the two year certificate program involves a credit system similar to that of the universities emphasising student self learning and providing for subject options. This will pave the way for subject specialisation in primary teacher education. Content areas include language development, science and mathematics, social and spiritual development, professional studies and community awareness and development. This latter course will allow teachers to have a better understanding of the curriculum and its relationship with the community.

Strategies

Among preferred strategies to be pursued will be:

- lecturer development opportunities to increase lecturers content knowledge;
- negotiation with the church agencies for the rationalisation and expansion of college places;
- increased number of non-residential students;
- designing of modular programs to minimise residential requirements;
- maximum utilisation of college facilities throughout the year;
- the development and implementation of programs for the specialisation of primary school teachers in multigrade teaching; and specialisation in no more than three subjects for the last three years of the primary school;
- the continuation of the development in a variety of delivery modes of the Diploma in Primary Education (Inservice) for the upgrading of certificated teachers, headmasters, other education officers and inspectors to cater for the needs of the restructured system; and
- the retraining of unemployed primary teachers through short up-grading courses on recent classroom methodology.

The three year program will result in a gross student enrolment of about 1950. Recruitment of lecturers will be overcome through the deliberate training of national staff at salaries commensurate with their qualifications and responsibilities.

Depending upon the availability of donor funding, capital works programs are expected to begin in 1997.

3.4 Secondary teacher training

This section discusses programs to improve the quality and quantity of secondary teacher education. The programs outline the support services to be provided by the Department of Education, as secondary teacher education is primarily the responsibility of the University of Papua New Guinea.

Overview

Formerly, secondary teacher education took place on two University of Papua New Guinea campuses: Goroka and Waigani.

Of these, Goroka was the principal source of lower secondary teachers, providing a three year course leading to a Diploma in Secondary Teaching. A two year Post Vocational Technical Certificate (PVTC) is also offered to students who have already acquired a qualification in fields such as the Expressive Arts and Agriculture.

The Waigani campus offered a four-year Bachelor of Education Program of which the first three years are spent in relevant faculties (either Arts and Sciences), with the final year being devoted to pedagogy—teaching methods and teaching practice.

A one year Post Graduate Diploma in Education (PGDE) was also offered at Waigani. Very few students go through this course and it has largely catered to the needs of upper secondary classes.

However, the combined efforts of the Goroka and Waigani campuses have been insufficient to provide the nation with an adequate number of secondary school teachers. This is despite the fact that total enrolments at Goroka have fluctuated greatly over the years and there has, at times, been excess capacity at the college. Enrolment data for the Goroka Campus for pre service students is shown in Table 62.

Table 62 UPNG (Goroka) preservice

	Year 1			Year 2			Year 3			Total		
	M	F	Total	M	F	Total	M	F	Total	M	F	Total
1983	63	31	94	135	62	197	72	58	130	270	151	421
1984	29	15	44	77	66	143	101	59	160	207	140	347
1985	32	9	41	75	38	113	79	66	145	186	113	299
1986	61	18	79	65	41	106	68	37	105	194	96	290
1987	64	15	79	89	60	149	60	38	98	213	113	326
1988	55	13	68	93	35	128	77	51	128	225	99	324
1989	61	33	94	66	30	96	79	25	104	206	88	294
1990	102	65	167	65	26	91	69	23	92	236	114	350
1991	46	44	90	80	57	137	57	20	77	183	121	304
1992	38	37	75	32	33	65	73	53	126	143	123	266
1993	49	49	98	28	37	65	35	35	70	112	121	233
1994	96	68	164	49	48	97	37	36	73	182	152	334
1995	86	57	143	92	67	159	43	47	90	221	171	392

Source : Department of Education

Note: This table should be treated with some caution. The Year 1 figures include, in the early 1980s, students on the Preliminary Year course. In 1994 and 1995 the figures include students on the Pre Service four year BEd program.

It is hoped that eventually all secondary preservice teacher education programs will be at Bachelor level, and all specialisations will be covered. Special incentives may be required to attract a sufficient number of graduates in some areas, particularly in the field of mathematics and science.

In addition to the preservice diploma courses, Goroka also conducts courses for Agriculture teachers. This has traditionally been a one year course (recently extended to two years) for Agriculture Diploma holders. It is designed to prepare teachers for agriculture teaching in the high schools. This has been the sole source of agriculture teachers which is an area of shortage for the high schools in the country. Enrolments are shown in Table 63.

Table 63 PVTCS Agriculture enrolments by year, 1983 to 1995

	M	F	Total
1983	34	0	34
1984	32	3	35
1985	27	1	28
1986	27	1	28
1987	19	6	25
1988	26	3	29
1989	15	3	18
1990	33	9	42
1991	26	6	32
1992	20	1	21
1993	26	2	28
1994	25	2	27
1995	23	1	24

Source : Department of Education

In 1994 there was a deficit of about 350 Papua New Guinean secondary school teachers. This shortfall is filled by expatriate teachers - both contract and volunteer - and community school trained Papua New Guineans. There is an increasing number of Papua New Guinean teachers with subject degrees but no teaching qualifications being employed in the provincial high school system. It is presumed that this has been caused by a drop in available opportunities for degree holders in other areas of the public sector and the private sector. There is a need for increased places to be available on the PGDE course to cater for this group who may wish to make a career out of teaching. This would be a much more efficient way of increasing the number of Papua New Guineans capable of teaching at the Grade 11 and 12 level than putting serving teachers through a two year BEd Inservice course.

The planned expansion of the national education system, the need to eliminate the deficit and localise teacher positions in secondary schools, will require an increase in the number of secondary school teachers, particularly for teaching the upper grades. It is essential to provide sufficient teacher graduates to:

- eliminate the current secondary teacher deficit;
- provide for the additional (small) numbers required for Grades 7 to 10, and later grades 9 and 10 only, and to cater for attrition; and
- provide sufficient graduate teachers for the rapidly expanding Grade 11 and 12 classes.

The future

The University of Papua New Guinea is currently in the process of centralising all education courses at Goroka, phasing out the diploma courses and moving to a four year B Ed program.

The expansion of the facilities and the transfer of some courses to other institutions, for example Physical Education to the National Sports Institute will be necessary to produce the required number of graduates.

The numbers required at the junior and senior secondary level are shown in Table 64.

**Table 64 Secondary teacher requirements by sector,
1983 to 1995**

	Jun Sec	Sen Sec	Total
1995	2755	189	2944
1996	2848	237	3085
1997	2827	289	3115
1998	2799	325	3123
1999	2782	353	3135
2000	2766	394	3161
2001	2738	445	3183
2002	2696	498	3194
2003	2663	548	3212
2004	2664	566	3230

Source : Resources Study, 1995 (Updated)

Note: The Jun Sec figures include provision for teachers at vocational centres

Major strategies for ensuring an adequate supply of secondary teachers, while at the same time gradually raising entry standards and program levels, will include:

- funding by National Department of Education for 120 places per annum for B. Ed (I), and 20 places per annum for Post-Graduate Diploma in Education;
- liaison with OHE by the National Education Board to obtain sufficient National Scholarships for the number of students required;
- phasing out the Diploma in Secondary Teaching and replacing it with a Bachelor of Education program at the Goroka campus of the UPNG;
- strengthening and expanding the Post-Graduate Diploma in Education program to provide sufficient teachers for Grades 11 and 12;
- providing postgraduate study opportunities for the most able teachers;
- building a 200 student dormitory at Goroka; and
- upgrading of library, science and computing facilities at Goroka.

3.5 Vocational teacher training

This section discusses the training of teachers for vocational centres and vocational secondary schools.

Overview

Two courses provide training for teachers in vocational centres. These courses are currently conducted at the Port Moresby Inservice College. Vocational Centre trades instructors must have completed an apprenticeship, hold relevant qualifications, have four or more years work experience in their trade, and have completed the one year Teacher's Certificate Program conducted at Port Moresby Teachers' College. A three year Diploma program prepares post-grade 10 candidates as Vocational Centre teachers specialising in home economics.

A small number of teachers have come from courses conducted at Goroka Teacher's College. Others are ex primary and secondary teachers. There are others who are specialists and crafts people, who cannot qualify academically to undertake teacher training, but because of their superior skills are able to gain provisional registration to teach their specialisation in selected vocational centres. Almost half of the Vocational Centre staff are not formally qualified. 10% of staff in vocational centres in 1994 were overseas officers.

A cadre of trained instructors for all trade subjects and trained teachers for all general education courses is the ultimate aim for the vocational centres. A special project mounted some years ago introduced inservice training for vocational centre managers and teachers over a five year period, and this project is ongoing. Initially, trainee teachers must have an entrance qualification of Grade 10. As the supply of students meets this requirement, the general entrance education qualification will become Grade 12. Teachers in trade subjects must be qualified tradesmen with four or more years of work experience in their trade before enrolling for teacher training.

The major challenge facing the Department in this sector is to ensure that all teachers are fully qualified. In order to achieve this there will need to be provision of better preservice and inservice training for secondary level vocational education teachers.

The future

There will not be any increase in the number of trade instructors required over the plan period. This is because of the plans to offer an alternative form of Grade 9 and 10 education at the centres and to improve the existing centres. This will give a chance to ensure that all instructors have teaching qualifications. Table 65 gives the number of vocational trade instructors required. The junior secondary teachers required for the vocational centres offering alternative forms of Grades 9 and 10 have been catered for in the secondary teacher training section.

Table 65 Vocational centre instructor requirements by year, 1983 to 1995

	Instructors
1995	629
1996	618
1997	611
1998	601
1999	588
2000	572
2001	552
2002	535
2003	532
2004	526

Source : Resources Study, 1995 (Updated)

Note: This is trade instructors only.

To ensure better training of instructors for vocational centres courses will be relocated from the Port Moresby In Service College and a number of options are currently being considered by the relevant Divisions. An instructional skills course for instructors who have trade qualifications but no teacher training will be developed.

3.6 Technical Teacher Training

Overview

PETT teachers are trained in a one year programs. Prerequisites for entry are Grade 10 qualifications and five years of industrial or commercial experience. Teachers who teach at Certificate level are either university graduates or have the Certificate of Higher Technical Education and three years of experience. Teachers for other specialised technical education, in the broader sense of the term, are also trained at Goroka. This is provided for at the Goroka campus of UPNG.

Technical teacher training will involve increasing the number of technical teacher trainees and their instructors' technological skills by teaching adaptable, broad-based, analytical and creative skills. Other programs will include increasing the quality and standards of education, involving industry in program planning and teaching. Facilities will be modernised, including programs for entrepreneurial and skills training, such as managerial technology, for agricultural and fisheries biotechnologies, developing and handling new materials, and developing a national trade testing and certification system.

Control and coordination of the technical teacher education will be professionalised through the establishment of an Institute of Teacher Education as approved in the National Higher Education Plan. The Institute will:

- represent the interests of technical teachers as a professional body;
- engage in the collective tasks of coordinating curriculum revision and development;
- represent the interests of the professional technical teachers in their relationships with the relevant government department, and with employers;
- rationalise and plan the supply of technical education to meet labour force needs; and
- prepare budget proposals to meet these tasks.

The shift from government departmental and bureaucratic control will facilitate the participation of technical teacher educators in the rewriting of technical syllabii, and ensure that as technical teacher educators, they are aware of the most recent developments. It will also ensure that there is a common pool of resource materials available to both the teacher educators and the members of the Institute.

By locating both the Goroka University College, and the Institute and School of Technical Education on the same campus, the rationalisation and coordination of short-term inservice courses will be facilitated. The institute will ensure that the organisation and coordination of these courses, which is lacking at present, is restored. In line with the policy of the Office of Higher Education, course advisory committees will be set up to include professional representatives from the technical colleges and the vocational centres, and also from the general public.

Past interventions

The most recent intervention was an Asian Development Bank (ADB) assisted Project (1982 to 1988) to establish training centres for technical teachers and apprentices with expanded teacher training at the Goroka Teachers College and improved apprenticeship training.

Despite the ADB project noted earlier the contents of the subjects taught as well as the qualifications of the teachers have remained unchanged. A case in point is the demand for the products of the technical colleges, in areas such as Catering (UNDP 1987), is high and cannot be met.

The problems associated with the high demand for technical graduates are compounded, since the need for localising the technical education staff cannot yet be met. The shortage of technical graduates in these areas ensures that there will be a demand in the private market for high quality national practitioners, and that it will therefore be very difficult to localise the technical educators as yet. An

average of twelve national technical teachers are lost each year to private enterprise. Thus it is difficult to ensure localisation, and a combination of good training and relevant local experience.

For this purpose, a formalised system of teacher training, advanced instruction and refresher courses is required. At present, such a formalised system of further education for teachers does not exist.

Current situation

Enrolments at UPNG (Goroka) on technical teacher training courses are shown in Table 66. The figures include all trade areas (which, unfortunately, are not broken down) and secretarial courses. In addition, there are a few students who have studied to become clerical lecturers.

Table 66 Enrolments on technical teacher training courses, 1983 to 1995

	M	F	Total
1983	14	9	23
1984	18	5	23
1985	23	2	25
1986	21	5	26
1987	23	1	24
1988	23	2	25
1989	9	7	16
1990	8	0	8
1991	15	2	17
1992	10	0	10
1993	6	0	6
1994	17	4	21
1995	11	0	11

Source : Department of Education

The future

As shown in Table 67, the number of technical college lecturers will remain constant for the first few years of the plan period. This will allow the student teacher ratio to rise from the present very low level of less than 10 to a more reasonable target of 1:15. The large growth in 1998 is due to the second year of the two year TTC coming on line.

Table 67 Lecturer requirements, 1994 to 2004

	Lecturers
1994	176
1995	176
1996	176
1997	176
1998	208
1999	218
2000	229
2001	241
2002	253

2003	266
2004	280

Source: Resource Study, 1995 (Updated)

Current professional training of technical teacher educators will be extended to two years. It will continue to have many of the strengths of the present program at Goroka, and will recruit many of these same kinds of student-teachers. In the interim, student-teachers will either become qualified tradesmen with five years of successful experience in their trade, will eventually become graduates of the Universities of Technology. Entrance to Teacher training will require candidates with higher technical and academic specialisation.

The teacher education program will take into account the strengths and weaknesses of the student-teachers and the multiple directions of their future careers. The new program will include preparation for teaching as well as upgrading the skills they will be required to teach. The core course of teaching skills which all student teachers must complete, will take into account the variety of disciplines, which the graduates of the teacher education program will later use.

For the upgrading of their content skills, a flexible program will require student-teachers to complete an individualised higher level course to complement their existing strengths, and to train them in their future roles as teachers.

There will be a double redefinition of the role of technical teachers required at the present time. Technical teachers will need to be educated in order to meet the needs of training for the modern sector, and they need to be educated so that they have the capacity, confidence and commitment to engage in curriculum development. To do this, both the institutional framework within which technical teachers work and are trained will be adapted. The move to a two year preservice Technical Education Program will strengthen lecturers' participation in curriculum rewriting.

4 STAFF DEVELOPMENT

Overview

'Staff development' means the deliberate and continuous process of working towards the personal and professional growth of individuals and groups in all divisions and institutions within the National Education System. Staff development programs aim to assist staff members to cultivate those skills whose application will improve the efficiency and effectiveness of all aspects of the organisation.

The Staff Development Unit (SDU) has been providing inservice training, and reform related programs since 1992, to staff in all sectors of the National Education System. This service will be expanded to include the training of trainers of elementary teachers.

Budget lead-times make it difficult to provide training in advance of classroom requirements, and sudden withdrawals of funding by the Department of Finance and Planning made the provision of inservice uncertain.

The Secretary's Staff Meeting (SSM) meets monthly as required and is the executive advisory body of the Secretary. All staff development policy recommendations are approved by this body. The Executive Development Committee (EDC) meeting monthly and the Staff Development Committee (SDC) meets fortnightly to select and evaluate teachers and public servants for and on training courses and recommend related policy matters to the Secretary. The National Inservice Committee (NIC) meets quarterly and makes recommendations to the Secretary on matters concerning training courses of less than three months' duration.

Staff development activities include:

- long and short courses both overseas and in-country;
- degree and post-graduate training; attachments;
- On-the-job training;
- National Inservice Training (NIST) week funding and support; and
- associateships.

Some training needs activities are based on specific skill improvement, improving knowledge and changing attitudes, while other programs change according to government and Department of Education policies and priorities, needs and expectations. Staff development and INSET programs must be cost effective and the projected outcomes must be in line with government policies.

Staff development activities are designed to have an impact on the following areas of training:

- the quality of teaching and learning;
- professional career development for teachers and public servants; and
- the promotion of action learning from which specific organisations' training programs will be developed in management and administration

The beneficiaries of these programs come from all parts of the education system. Teachers will comprise the bulk of clients but others involved will include inspectors, trainers of trainers and education managers at all levels.

The Staff Development Unit will ensure that the training needs of the national education system are effectively catered for, in order to deal with the changes in educational developments through the provision of appropriate training programs relating to:

- upgrading of skills and knowledge;

- inhouse courses to improve efficiency in management of the system;
- inservice courses;
- local and overseas fellowship;
- on-the-job training and work experience; and
- localisation.

Other strategies will involve the streamlining of the procedures for determining and selection of suitable officers to participate in specific training programs. This will include:

- liaison with OHE to obtain sufficient National Scholarships for twenty students in the post graduate diploma in education at UPNG; and
- making scholarships available so that all required specialisations are adequately covered.

In addition, a Review Panel has been established to review the operations of the Port Moresby Inservice College, with a view to making this institution more responsive to the demands of the Education Reform and the Performance Based Salary.

Present situation

At present less than twenty SDU staff manage the inservice training of some 20 000 personnel in the NDOE.

A professional staff of ten Staff Development Officers (SDOs) deals directly with the divisions of the Department of Education. A three-person Course Liaison Section does the administrative work, backed by a Registrar, Divisional Clerk and clerical staff. Senior staff are the Superintendent, Principal Staff Development Officer and the Principal Scholarship Administration Officer.

The Port Moresby Inservice College (PMIC) provides a range of courses to Department of Education staff. Residential courses are delivered in Port Moresby and short courses are delivered in regional centres, usually to the trainers (community school inspectors and head teachers) who will train the teachers.

Forward planning has been difficult, due to the unpredictable pace of the education reform and of budget allocations in 1992 - 1995. Budgets need to be protected from sudden withdrawals to avoid disruption to students' training.

Adequate appropriation will be required in order to meet the current needs of the reform and to meet new needs as they emerge. The need for training Inspectors in financial management is an example of one such need that arose suddenly, had to be met quickly, but which was not provided for in the budget.

The future

The overall aim of staff development in the DOE and the NES is to provide opportunities for the integral human development of teachers, public servants and other support staff, by increasing their capabilities to:

- improve their efficiency and competency in managing their institutions, divisions or their jobs;
- continue their personal and professional growth;
- improve the teaching and learning programs in the schools and colleges;
- develop existing, and learn new knowledge, and skills to meet the changing needs of the system;
- improve efficiency for better management, and the economic utilisation of resources in the NES; and

- use creative problem-solving approaches to find ways to provide the above.

Staff development programs aim to assist staff members to cultivate those skills whose application will improve the efficiency and effectiveness of all aspects of the organisation. The Staff Development Unit should also plan career developments for national staff and liaise with the Department of Personnel Management and International Agencies regarding scholarships and training bids.

Elementary

The Field Services Section of the Port Moresby Inservice College has been heavily involved, along with the Summer Institute of Linguistics, with the training of elementary teacher trainers. Eventually, the Elementary Trainer's Certificate will be able to be articulated with the Diploma of Education Primary (Inservice) from PMIC. Approximately fifty trainers per year will receive this certificate.

The principal challenge at this level is the delivery of elementary teacher training courses at the provincial and district levels. This needs to be done if targets for education reform implementation are to be met.

Primary

At the primary level emphasis will be put on the upgrading of qualifications of primary school teachers, in order to allow them to teach in Grades 7 and 8, and on school administration, in particular financial management for headteachers.

The transforming of the Teaching Certificate into a Diploma level course through a three year program has meant that the vast majority of primary school teachers in the country need to be offered opportunities to upgrade their own qualifications. To this end the Diploma in Education Primary (Inservice)—DEP(I)—has been developed.

A major challenge in the future will be to move away from the traditional residential mode of delivery towards distance education as the major mode of delivery for inservice. The vast number of teachers

involved both in terms of costs and disruption at the school level, dictate that this be done. In order to achieve these aims both the primary curriculum and non curriculum modules of the DEP(I) will be converted into distance education mode. These modules then need to be produced and a mechanism for delivery developed. In addition, there is a need for the procurement of selected distance education components of a child care and education course.

The institutionalising of multigrade, or composite class teaching is crucial to the cost effectiveness, sustainability and ultimate success of the education reform. Multigrade teaching will form a module within the DEP(I) and workshops for teachers currently teaching such classes in the provinces will be catered for. The development and delivery of an inservice training package for new teachers entering multigrade teaching will also be undertaken.

Secondary

At the secondary level emphasis will be put on three main areas:

- to support the upgrading of teachers qualifications to degree level through the universities;
- to support training in a teacher qualification (PGDE), for holders of specialist degrees, and
- to support the upgrading of identified specialist teachers and administrators in the secondary schools to post-graduate level.

Currently some teachers in upper secondary classes do not have degrees. A base level requirement will, ideally and ultimately, be a first degree. In the longer term a major program for upgrading provincial high teachers to degree level will be needed.

Ten graduates with specialist degrees per year receive teacher training through the Post-Graduate Diploma of Education (PGDE) at UPNG. These have in the past been upper secondary teachers. The situation, however is changing with more and more graduates being employed as high school teachers without a teaching qualification. To provide teacher training for this growing group would be a much more economic method of increasing the stock of qualified specialist graduate teachers than putting diploma holders through lengthy degree courses. Good quality, well-organised distance education may be the answer to this particular problem and would allow for the teachers to remain within their schools whilst completing their teacher training.

Vocational

The great need in the teacher education field for the vocational sector is the challenge of ensuring that all the male instructors have teaching qualifications. Many, at present, have only trade qualifications. There are few places available on the course currently run at the In Service College. As with the secondary sector, distance education could be the most efficient method of achieving the target of all male vocational centre instructors being fully qualified. This will require the development or purchase of an instructional package. The assistance of the Commonwealth of Learning will be sought in this.

There also needs to be a home economics package developed to become part of the DEP(I). This will allow for the upgrading of female vocational centre instructors to Diploma level.

5 CURRICULUM, MEASUREMENT, MATERIALS PRODUCTION AND DISTRIBUTION

Introduction

There is great concern that the current education system is failing to help the majority of Papua New Guineans to participate profitably in the activities of their communities and in the development of the nation. New initiatives will ensure that the development of a more appropriate curriculum will:

- start in a language that the children speak;
- grow out of and build upon the culture and way of life of the people;
- be relevant to the social, spiritual and developmental needs of the different communities of Papua New Guinea; and
- integrate both traditional and modern practical and academic skills and knowledge.

The implementation of the Philosophy of Education for Papua New Guinea has led to the beginnings of a restructure of both the school system and the curriculum. These changes were given impetus by the National Executive Council's approval of the Literacy and Awareness Program, Relevant Education for All, the Access and Expansion Programs, the Education Act and the Education (Amendment) Act which today form the basis of NDOE curriculum review.

The main objectives of curriculum development are:

- to give strong support to development of the elementary component which uses the language which the child speaks as the language of initial literacy and early education;
- to redirect curriculum bias to provide a balanced and relevant education, particularly to support the restructure of the education system that is currently taking place;
- to enhance the writing, production and distribution capacity of the Department of Education;
- to develop the radio and television production capacity of the Department of Education as PNG develops its technological capability;
- to expand and strengthen the Measurement Services capacity;
- to increase flexibility in examination and certification procedures to support the curriculum reform;
- to integrate the post-primary general education/vocational education;
- to develop advanced courses at the upper secondary level;
- to support community and provincial curriculum development; and

- to fund new capital works and upgrade and maintain equipment at the national level to ensure that the curriculum reforms take place.

Previous interventions

The concept of education as a preparation for productive community living is not new in Papua New Guinea. Technical or vocational education was first established by missionaries in the 1870s with the Papuan Institute, and was a hotly debated issue during the next fifty years of mission-dominated education. In the modern context, and with the move to independence, many Papua New Guineans questioned the basically Australian academic education that was fast becoming the accepted mode. Sir Alkan Tololo, the first Papua New Guinean Secretary for Education, warned the Waigani Seminar in 1974 of the dangers of the widespread belief that Western style education was being perceived as a way to paid employment.

A number of projects including the Secondary School Community Extension Pilot Project (SSCEP) and the Community School Agriculture Pilot Project (CSAPP) grew out of these concerns. Spurred on by the National Executive Council endorsement of the Philosophy of Education in 1987, and the unilateral action by several provinces including the North Solomons, Enga, and East New Britain, the movement towards a greater integration of practical and academic education gained national support.

Up to the 1970s, the emphasis in curriculum development was on the production of teacher materials such as syllabii and teacher's guides. Since then, student textbooks and support material have been produced for most subjects at both the Primary and Secondary levels.

In the colonial era, the Government Stores and Supply Division was the main agent through which schools obtained consumable materials. Decentralisation has meant that all basic school consumable materials are procured by the Provincial Divisions of Education (PDOE). However, curriculum materials such as syllabii, teachers' guides and textbooks are still procured by the National Department of Education by direct production, or purchase using the Government tender and procurement procedures. Realising the benefits of 'economies of scale', many provincial high schools have established associations in order for schools to buy materials in bulk. The concept of cooperative purchase is also being adopted by most of the provinces.

Provincial high schools are currently preparing students for academically based Grade 10 examinations. The most notable attempt to mitigate the disadvantages of this system was SSCEP which began in 1979. To avoid SSCEP schools themselves being viewed as an inferior, less academic alternative to conventional high schools, the curriculum of the four core subjects was not changed, but taught in a different way. The school based curriculum development under this project was not successful requiring a serious review of how this could be done in future. The project ended in 1985, and since then the underlying principles have been integrated into the broader system. Criterion-referenced assessment of practical subjects is resulting in the development of more appropriate assessment and certification procedures.

Prior to 1982, locally produced curriculum materials were written, typed, illustrated, designed and printed at the NDOE. Association with overseas publishers was used where it was felt that the NDOE lacked the technical publishing capacity for a particular project. There are three methods of providing curriculum materials, namely:

- creation of new material;
- adaptation of existing material; and
- purchase of existing material.

The World Bank has played a major role in the development and provision of curriculum materials under a series of projects over the past twenty years which has seen the development of many publications and the development of local production capacity and facilities.

While the illustrator, designer and printers training components of the World Bank projects were successful, the writer training component was far less successful. Only one of the teachers recruited from the field remained in the CU as a writer. Most members of CDD's original small writing fraternity now work for the NDOE in other more senior positions. As long as continuing training, assessment and other demands continue to be made on the small group of curriculum writers, most of whom have little time available for such additional tasks, production schedules will not be met and extra costs will be incurred.

Consequently other options for the production of textbooks need to be explored. Such options include the use of contract writers, writing workshops, the use of overseas education specialist companies as well as the use of local and overseas publishing companies. All of these are consistent with the current Government policy of 'outsourcing' services when it is more cost-effective.

The future

The national government envisions an education system which is relevant to the social, spiritual and resource development needs and opportunities of our citizens. This vision is one which accepts the culture of the community as the starting point, and builds upon it to develop citizens who:

- are committed to their own personal development and view education as a continuing life-long process;
- have developed a productive work ethic, and value both rural and urban community development activities in a context of national development;
- are prepared for the realities of life in most communities; and
- are capable of participating in further training for manpower needs.

Based on this philosophy, the Government defines quality basic education as an education which:

- strengthens citizens' identification with, rather than alienation from, their own communities;
- gives value and status back to the appropriate attitudes, knowledge and skills relevant to community development; and
- supplements this with an appropriate degree of competence in English, Mathematics and Science.

The main consequence of the reform is that there will be two parallel systems, one expanding and the other diminishing, until the restructure is complete. This has significant implications for curriculum development, materials production and distribution, and examinations and assessment.

Virtually all of the vernacular curriculum development in Elementary and Lower Primary will be done at the local level in schools clustered by language groups. The Curriculum Development Division will play a different role in that it will provide guidelines for this development and act as technical advisers to the process.

A flexible approach to the production of classroom materials will be needed due to the limited number of copies required. This will include such low technology processes such as silk screens, the support and maintenance of local Literacy and Awareness Materials Production (LAMP) Centres, the use of provincial government owned printing facilities, NGO resources, and (where costs are competitive) the increasing use of local private sector printing companies.

Elementary and Primary

The restructured system will see a three-year Elementary period followed by six years of Primary Education, providing basic education for all children up to Grade 8 within their local communities. Existing policy calls for a redirection of curriculum bias. A curriculum is proposed for the restructure of the basic education system through:

- initial literacy in a language the child speaks, and a transfer of these skills to English;

- an integrated activity-based elementary, Prep to Grade 2, and lower primary education, Grades 3 to 5, with a strong local vernacular component, and a tapering off into discrete regular subjects at the upper primary level, Grades 6 to 8 ;
- a renewed emphasis on social, cultural, spiritual, ethical, and moral values in education, and
- a community orientation which emphasises those skills that children need to play a more productive role in the development of their own communities and participation in the manpower needs of PNG within the context of overall national development.

Secondary

Secondary education consists of Grades 9 to 12 in high schools and secondary schools, vocational centres and the College of Distance Education. Youth development and other centres also offer secondary level education. The present system does not cater for the differences and problems that caring teachers must face when teaching the bottom and middle levels of each class, without allowing the most gifted students to become frustrated.

The restructured system attempts to break down some of the old distinctions, allowing students a choice, according to their abilities, of several different routes to tertiary levels of education. Vocational Centres and Distance Education Institutions will offer courses equivalent to those currently followed in the formal high school system and a system of Vocational Secondary Schools is under consideration.

Schools will be assisted to teach the students vocational skills which they can use in their own environment. Greater flexibility and more choice must be given to schools in order to cater for the needs of the different regions of the country. Recent projects have provided limited assistance through grants and Kina for Kina subsidies for Provincial High Schools and Vocational Centres to purchase tools.

Vocational Centres operate without any clear guidelines regarding courses. There is a lack of professionally produced curriculum materials providing a detailed program of learning that integrates practical and business skills, and the basic educational skills of literacy and numeracy. The transfer of responsibility for curriculum development in Vocational Centres under the NOLPLLG to DOE will lead to the development of a core curriculum.

With the expansion of access to Grades 11 and 12 through the new secondary schools, the initial goal of a grade 12 education as the preparation of a limited number of students for further education, has broadened to include the preparation of students for other professional or sub-professional fields of study. A curriculum needs to be developed that provides greater choice and is based on the competence of the students, not just on the desired intake of the universities. Advanced courses to challenge the more able students need to be developed.

Effects on curriculum development

The proposed curriculum redirection, the continued production of textbook and supplementary material, and the provision of National Department of Education professional resources to support provincial curriculum development and pilot projects, will require high quality staff. A problem that exists at the national level is being able to get qualified staff who are sympathetic to the needs and aspirations of PNG. There is a need for a broader base of upper middle management personnel as many of these

positions are currently occupied by contract officers. There will, in the foreseeable future, be the continued need for overseas technical assistance. Some provinces have appointed specific professional officers to coordinate, at the provincial level, activities such as curriculum development, testing and inservice, and should be encouraged to utilise national grants for such purposes.

A new cadre of Elementary teacher trainers will be responsible for the development of vernacular curriculum and the production of classroom materials at the district level. They will need the strong support and assistance from NDOE staff. In addition, a new bridging curriculum that provides for the transfer of literacy skills acquired in the vernacular to English is being developed and will gradually be introduced to all schools.

Materials production

Development and production of syllabii, curriculum statements, teacher's guides, and other support materials in all subject areas and at all levels, needs to be continued. Initial material production has begun in the 'new core' areas of Social and Spiritual Development and Vocational Education.

Until recently virtually all materials were produced in English. The adoption by government of the new elementary school system has resulted in the need for vernacular materials in the formal system throughout the country. There will be a strong need to monitor the quality and suitability of these materials in the classrooms at the elementary and primary levels. Strategies and implementation procedures to do this will need to be developed and monitored by the Curriculum Unit.

Teacher materials such as teachers guides, syllabi, curriculum statements, and inservice packages have, in most cases, been totally produced within the NDOE. The present requirement is between 10 000 to 40 000 copies for each student text, although this will change drastically as the restructure is implemented with the introduction of elementary and greater access is provided to the higher grades. Strategies will be developed to enhance production within the context of major government policies relating to outsourcing of non-core services.

Materials procurement

It is essential that student textbooks continue to be available for student use. The shift of some purchasing to the provincial and school level will continue.

To fund replacements, the NDOE would need large amounts of money each year. Alternatively, parents, schools or provinces will become responsible for replacement costs. As recommended by a World Bank sponsored review, original publishers of most textbooks have been given the right to reprint and supply the market. In the absence of a viable resupply system, it is essential that textbooks and teaching equipment not already covered by such agreements are made available on the open market.

Materials distribution

The distribution of materials has been very difficult, and many materials remained in storage because of the lack of funding for distribution. Most materials dispatched appear to reach most schools, but only after substantial delays and not in the planned quantities. NDOE faces major constraints related to storage, inventory control, forward planning and national versus provincial roles. At the provincial level, the distribution of materials to provincial high schools does not present any significant problem, because they are few in number and are situated in less remote parts of the country. However, book distribution to community schools is not operating efficiently. At present, a 'success' rate of only sixty percent can be claimed nationally. Strategies will be developed to enhance

distribution within the context of major government policies relating to outsourcing of non-core services.

Radio broadcasts

Most of the 1,000 radio broadcasts currently included in the primary school curriculum are out-of-date. While broadcasts are meant to support and to reinforce the syllabus, most of what goes on air does not. New programs are the first priority for the new curriculum. Then the revision of current programs, related to present-day syllabus objectives, are needed and the number of programs that need to be reviewed for possible rewriting or adaptation is enormous. The selection and training of a producer is an easier task than that of finding script writers. Essential equipment is in need of electronic repair, thus it is hard to get quality sound productions. Radio reception in some areas is very poor, and many schools have poor quality radios or no radio at all. An alternative to improving the quality of reception in remote areas is to duplicate radio broadcasts on to cassettes for supply to schools. This will be a mammoth task.