CHAPTER 4 - POPULATION, EMPLOYMENT AND HUMAN RESOURCE DEVELOPMENT

LIST OF TABLES

Chapter 4

Population, Employment and Human Resource Development

4 POPULATION, EMPLOYMENT AND HUMAN RESOURCE DEVELOPMENT

I. INTRODUCTION

4.01 During the Seventh Malaysia Plan period, concerted efforts were made towards increasing productivity and efficiency in the use of labour as well as strengthening the human resource base for sustained economic growth. There was an overall improvement in labour productivity arising from increased investment in human resource development and new technology. Despite the economic crisis in 1998, employment growth for the Plan period was impressive due to the quick recovery of the economy, particularly the manufacturing sector. Unemployment was also contained at a low rate due to the implementation of effective labour market measures. The supply of highly skilled and trained manpower increased as a result of capacity expansion in education and training institutions.

4.02 The overall improved performance of the economy during the Eighth Malaysia Plan period is expected to boost employment growth with the country maintaining full employment level. The demand will be for high level skills as the economy moves towards higher capital-intensity and knowledge-based production process. Consequently, it is essential for the nation to create a critical mass of trained, skilled and knowledge manpower to sustain economic growth and increase competitiveness. Towards this end, efforts will be continued to strengthen the education and training delivery system to be more responsive to the changing needs of industries and technological advancements. The thrust of human resource development during the Plan period will, therefore, be the enhancement of the qualitative aspects of human resources in line with the needs of a knowledge-based economy.

II. PROGRESS, 1996-2000

4.03 The Seventh Plan began with a labour shortage situation but the economic crisis dampened labour demand in 1998. Unemployment rate increased from 2.5 per cent in 1996 to 3.4 per cent in 1999, indicating reduced labour utilization. However, with improved economic growth, unemployment was reduced to 3.1 per cent at the end of the Plan period. Nevertheless, the transformation of production methods and processes towards capital-intensity and information and communications technology (ICT) applications led to shortages of highly skilled manpower in specific areas.

Population

4.04 Current estimates indicate that the Malaysian population increased at an average annual rate of 2.4 per cent during the Seventh Plan period to reach 23.27 million in 2000, as shown in *Table 4-1*. The rate of population growth continued to slow down with the declining fertility rate as the country progressed towards a developed nation status. The fertility rate is defined as the number of children a woman bears during her reproductive age**.** The population of Malaysian citizens grew at an average rate of 2.3 per cent per annum while the non-citizen population increased at a higher rate of 4.3 per cent during the period. The median age of the population in 2000 was 23.9 years indicating that Malaysia continues to have a young population age structure.

4.05 The dependency ratio, which is the ratio of dependants to every 100 persons of working age, decreased from 62.7 per cent in 1995 to 59.1 per cent in 2000. The drop in the dependency ratio was due to the increase in the proportion of the working age population of 15-64 years and the reduction of the population below 15 years as well as slower growth of the population aged 65 years and above. The working age population was growing at a faster rate than that of the population below 15 years and the total population as a whole. Non-citizens accounted for 7.6 per cent of the population in the working age group.

4.06 With different trends in fertility, the rates of growth of the population in terms of ethnic composition of Malaysian citizens, varied substantially. The Bumiputera population increased at an average annual rate of 3.2 per cent as their fertility rate was the highest at 3.62, accounting for 66.1 per cent of the Malaysian citizens in 2000. The Chinese, with a fertility rate of 2.57, grew at an average annual rate of 1.4 per cent to account for 25.3 per cent of the citizen population while the Indian, with a fertility rate of 2.55, grew at 1.8 per cent and accounted for 7.4 per cent.

TABLE 4-1

POPULATION SIZE AND AGE-STRUCTURE, 1995-2005
(million persons)

	1995	*%*	*2000*[1]	*%*	*2005*	*%*	*Average Annual Growth Rate (%)*	
							7MP	*8MP*
Total Population	**20.68**		**23.27**		**26.04**		***2.4***	***2.3***
Citizens	19.68	*100.0*	22.04	*100.0*	24.66	*100.0*	*2.3*	*2.3*
Bumiputera	12.47	*63.3*	14.56	*66.1*	16.59	*67.3*	*3.2*	*2.6*
Chinese	5.22	*26.5*	5.58	*25.3*	6.04	*24.5*	*1.4*	*1.6*
Indian	1.49	*7.6*	1.63	*7.4*	1.78	*7.2*	*1.8*	*1.8*
Others	0.50	*2.6*	0.27	*1.2*	0.25	*1.0*	*-12.7*	*-1.1*
Non-citizens	1.00		1.23		1.38		*4.3*	*2.4*
Age-Structure								
0-14	7.25	*35.0*	7.71	*33.1*	8.15	*31.3*	*1.2*	*1.1*
15-64	12.71	*61.5*	14.62	*62.9*	16.77	*64.4*	*2.8*	*2.8*
65 and above	0.72	*3.5*	0.94	*4.0*	1.12	*4.3*	*5.3*	*3.6*
Dependency Ratio (%)	*62.7*		*59.1*		*55.3*			
Median Age (years)	22.8		23.9		25.3			

Note: [1] This estimate is based on the preliminary count of the Population Census 2000 and has been adjusted for under-enumeration.

4.07 The proportion of the population living in urban areas continued to increase from 55.1 per cent in 1995 to 61.8 per cent in 2000, growing at an average annual rate of 4.8 per cent. This increase can be attributed to the migration of workers due to better economic opportunities and the expectation of an improved quality of life in urban areas. In addition, the extension of administrative urban boundaries also contributed to the increase.

Labour Force

4.08 The population in the working age group continued to increase during the Seventh Plan period at an average annual rate of 2.8 per cent to account for 62.9

per cent of the population in 2000. Labour force participation was affected by the economic crisis, which reduced employment opportunities and increased the number of workers who opted out of work under the voluntary separation schemes. Nevertheless, the size of the labour force continued to increase, *albeit* at a slower rate than that of the Sixth Plan, at 3.0 per cent per annum to reach 9.6 million in 2000. The Labour Force Survey (LFS) conducted by the Department of Statistics (DOS), indicated that 55.3 per cent of the labour force were in urban areas. Labour force participation rate (LFPR) increased from 64.9 per cent in 1995 to 65.5 per cent in 2000. Male LFPR increased marginally from 85.3 per cent in 1995 to 85.4 per cent in 2000 while female LFPR increased from 43.5 per cent to 44.5 per cent.

4.09 There were more than 1.3 million additional entrants into the labour market during the Plan period, averaging 254,400 persons per year. The proportion of labour force in the age group 15-24, however, declined, as a result of the extension of universal education from nine to eleven years. The LFS showed that the educational profile of the labour force improved since 1992 with more than half of the labour force attaining secondary education. Similarly, those with tertiary education also increased from 11.1 per cent in 1995 to 14.0 per cent in 2000.

4.10 The Plan period began with a persistent labour shortage problem, after experiencing five consecutive years of full employment. In the wake of continued labour constraints, firms especially in the manufacturing sector, resorted to the recruitment of foreign workers. The ratio of foreign workers to labour force worsened from 1:10 in 1995 to 1:8 in 1997 but improved to 1:13 in 2000. Although the labour market softened in the middle of the Plan period, certain firms within the agriculture, construction and manufacturing sectors continued to face labour constraints. From a total of 749,200 foreign workers with work permits in the year 2000, 31.3 per cent were in manufacturing, 22.9 per cent in agriculture, 8.7 per cent in construction, 7.4 per cent in services and 20.3 per cent worked as maids. Expatriates, who are highly skilled foreign workers, accounted for 9.4 per cent of the foreigners working in Malaysia. Efforts to reduce dependency on foreign labour, especially the unskilled, included the imposition of higher levies in the construction, manufacturing and services sectors. Other than maids and expatriates, the recruitment of new foreign workers was allowed only for certain subsectors and for a maximum duration of three years. In addition, medical charges were increased for foreign workers seeking treatment in Government clinics and hospitals.

Employment by Sector

4.11 Employment expanded at an average annual rate of 3.0 per cent during the period, similar to the 3.0 per cent growth in labour force, as shown in *Table 4-2*. The reduced demand for labour compared with that of the Sixth Plan period, was mainly due to excess capacity and lower level of new investments in 1998, resulting in a decline of 2.9 per cent in employment growth, especially in the construction, manufacturing and agriculture sectors. Labour market conditions, however, improved with the recovery in domestic economic activities towards the end of the Plan period. With 1.3 million jobs created, the unemployment rate was 3.1 per cent at the end of the period.

4.12 The *services sector*, which accounted for 48.6 per cent of total employment in 2000, recorded a moderate increase in employment by 3.9 per cent or 787,800 new jobs. Although growth in the finance, insurance, real estate and business services subsector was adversely affected by the economic crisis, it recovered to record the highest average employment growth of 6.4 per cent per annum due to the effective recovery measures undertaken. The wholesale and retail trade, hotels and restaurants subsector grew at an average rate of 3.7 per cent per annum, higher than the targeted rate as a result of the strengthening of consumer demand arising from the economic recovery.

4.13 Employment in the *manufacturing sector* expanded at a rate of 4.8 per cent during the period. The manufacturing sector contributed a major share of employment creation with 530,800 new jobs, thus increasing its share of total employment to 27.6 per cent in 2000 from 25.3 per cent in 1995. The upturn in world demand for electrical and electronics products coupled with Malaysia's competitiveness in this industry contributed to employment creation in the manufacturing sector.

4.14 The economic crisis severely affected the performance of the *construction sector* due to the large overhang, especially of office space, retail outlets and high-end residential premises as well as financing difficulties. This situation adversely affected employment creation during the period. Despite the negative employment growth experienced in 1998 and 1999, the sector grew at an average annual growth rate of 1.0 per cent during the period as a result of the fiscal stimulus.

TABLE 4-2

EMPLOYMENT BY SECTOR, 1995-2005
('000 persons)

Sector	*1995*	*%*	*2000*	*%*	*2005*	*%*	*Average Annual Growth Rate (%)*		*Net Job Creation*			
							7MP	*8MP*	*7MP*	*%*	*8MP*	*%*
Agriculture, Forestry, Livestock & Fishing	1,492.7	*18.7*	1,407.5	*15.2*	1,306.5	*12.0*	*-1.2*	*-1.5*	-85.2	*-6.7*	-101.0	*-6.4*
Mining & Quarrying	40.5	*0.5*	41.2	*0.4*	42.3	*0.4*	*0.3*	*0.5*	0.7	*0.1*	1.1	*0.1*
Manufacturing	2,027.5	*25.3*	2,558.3	*27.6*	3,200.3	*29.5*	*4.8*	*4.6*	530.8	*41.7*	642.0	*40.4*
Construction	717.1	*9.0*	755.0	*8.1*	880.1	*8.1*	*1.0*	*3.1*	37.9	*3.0*	125.1	*7.9*
Electricity, Gas & Water	67.4	*0.8*	75.0	*0.8*	85.6	*0.8*	*2.2*	*2.7*	7.6	*0.6*	10.6	*0.7*
Transport, Storage & Communications	395.2	*4.9*	461.6	*5.0*	552.7	*5.1*	*3.2*	*3.7*	66.4	*5.2*	91.1	*5.8*
Wholesale & Retail Trade, Hotels & Restaurants	1,323.5	*16.5*	1,584.2	*17.1*	1,880.9	*17.3*	*3.7*	*3.5*	260.7	*20.5*	296.7	*18.7*
Finance, Insurance, Real Estate & Business Services	372.8	*4.7*	508.7	*5.5*	647.3	*6.0*	*6.4*	*4.9*	135.9	*10.7*	138.6	*8.7*
Government Services	885.8	*11.1*	981.0	*10.6*	1,070.3	*9.8*	*2.1*	*1.8*	95.2	*7.5*	89.3	*5.6*
Other Services	676.7	*8.5*	898.7	*9.7*	1,192.9	*11.0*	*5.8*	*5.8*	222.0	*17.4*	294.2	*18.5*
Total	**7,999.2**	***100.0***	**9,271.2**	***100.0***	**10,858.9**	***100.0***	***3.0***	***3.2***	**1,272.0**	***100.0***	**1,587.7**	***100.0***
Labour Force	8,254.0		9,572.5		11,161.9		*3.0*	*3.1*				
Local	7,401.3		8,823.3		10,591.9		*3.6*	*3.7*				
Foreign	852.7		749.2		570.0		*-2.6*	*-5.3*				
Unemployment	254.8		301.3		303.0							
Unemployment Rate (%)	*3.1*		*3.1*		*2.7*							

4.15 Employment in the *agriculture sector* continued to contract, *albeit* at a slower rate than expected, at 1.2 per cent per annum. The slower decline can be attributed to workers returning to work in the sector as demand for workers in other sectors was reduced during the 1998-1999 period. However, estates continued to face labour shortages totalling 19,000 workers in 2000, due to the reluctance of local workers to be employed in this sector.

Employment by Occupation

4.16 The demand for workers indicated a shift towards occupations requiring high educational attainment and professional training in tandem with the strategic shift towards higher value-added activities. Employment in all major occupational groups expanded during the period with the demand for professional and technical as well as administrative and managerial categories registering the highest growth, as shown in *Table 4-3*.

4.17 The *professional and technical* category grew at 5.2 per cent per annum during the Plan period, accounting for 17.9 per cent of total employment created or 227,900 new jobs. Consequently, its share to total employment increased from 9.9 per cent in 1995 to 11 per cent in 2000. More than a quarter of the employment generated in this category was in the technical and ICT occupations due to greater capital intensity and expansion in the use of ICT in most sectors. The demand for workers with core IT skills such as systems engineering, software development, computer programming, chip design and development, systems analysis and design totalled 108,000 in 2000, compared with 88,160 in 1998. The demand for engineers and engineering assistants, mainly in the fields of electrical and electronics, mechanical, civil and chemical engineering also increased significantly to 61,030 and 143,220, respectively in 2000, as shown in *Table 4-4*.

4.18 To provide for quality medical and health services, 29,600 medical and health professionals and 45,860 allied health professionals were required in 2000. However, local public and private tertiary institutions were only able to produce 8,590 medical and health professionals and 24,170 allied health professionals during the Plan period. There was an acute shortage of pediatricians, obstetricians and gynaecologists, general surgeons, dental paramedics and pharmacists. At the same time, the number of teachers was increased to 306,590 in 2000 to meet the increased demand for education at primary and secondary levels. Despite this, there were critical shortages of teachers in specific subjects such as Mathematics, Science and the English language.

TABLE 4-3

EMPLOYMENT BY MAJOR OCCUPATIONAL GROUP, 1995-2005
('000 persons)

Occupational Group	*1995*	*%*	*2000*	*%*	*2005*	*%*	*Average Annual Growth Rate (%)*		*Net Job Creation*			
							7MP	*8MP*	*7MP*	*%*	*8MP*	*%*
Professional, Technical & Related Workers	791.9	*9.9*	1,019.8	*11.0*	1,314.0	*12.1*	*5.2*	*5.2*	227.9	*17.9*	294.2	*18.5*
Administrative & Managerial Workers	256.0	*3.2*	389.4	*4.2*	543.0	*5.0*	*8.8*	*6.9*	133.4	*10.5*	153.6	*9.7*
Clerical & Related Workers	871.9	*10.9*	1,029.1	*11.1*	1,216.2	*11.2*	*3.4*	*3.4*	157.2	*12.4*	187.1	*11.8*
Sales Workers	871.9	*10.9*	1,019.8	*11.0*	1,227.1	*11.3*	*3.2*	*3.8*	147.9	*11.6*	207.3	*13.1*
Service Workers	887.9	*11.1*	1,094.0	*11.8*	1,346.6	*12.4*	*4.3*	*4.2*	206.1	*16.2*	252.6	*15.9*
Production & Related Workers, Transport Equipment Operators & Labourers	2,711.8	*33.9*	3,041.0	*32.8*	3,355.4	*30.9*	*2.3*	*2.0*	329.2	*25.9*	314.4	*19.8*
Agricultural, Animal Husbandry & Forestry Workers, Fishermen & Hunters	1,607.8	*20.1*	1,678.1	*18.1*	1,856.6	*17.1*	*0.9*	*2.0*	70.3	*5.5*	178.5	*11.2*
Total	**7,999.2**	***100.0***	**9,271.2**	***100.0***	**10,858.9**	***100.0***	***3.0***	***3.2***	**1,272.0**	***100.0***	**1,587.7**	***100.0***

TABLE 4-4

EMPLOYMENT BY SELECTED OCCUPATION, 1995-2005

(persons)

Occupation	*7MP*			*8MP*			*Output*	
	Stock 1995	*Employment 2000*	*Net Increase*	*Stock 2000*	*Employment 2005*	*Net Increase*	*7MP*	*8MP*
Engineers[1]	**36,394**	**61,034**	**24,640**	**55,485**	**108,400**	**52,915**	**18,255**	**51,716**
Civil	13,077	20,711	7,634	18,828	27,500	8,672	5,162	11,716
Electrical & Electronics	10,233	21,064	10,831	19,149	38,600	19,451	5,538	16,537
Mechanical	11,835	16,082	4,247	14,620	29,800	15,180	4,729	13,100
Chemical	1,249	3,177	1,928	2,888	12,500	9,612	2,826	10,363
Engineering Assistants	**87,842**	**143,220**	**55,378**	**130,024**	**247,739**	**117,715**	**11,209**	**86,030**
Civil	19,381	25,973	6,592	23,436	71,401	47,965	2,709	23,020
Electrical & Electronics	39,216	65,353	26,137	59,412	103,856	44,444	3,055	37,700
Mechanical	28,454	50,020	21,566	45,473	67,073	21,600	2,885	21,600
Chemical	791	1,874	1,083	1,703	5,409	3,706	2,560	3,710
Medical & Health Professionals	**13,288**	**29,597**	**16,309**	**21,270**	**36,835**	**15,565**	**8,585**	**7,364**
Physicians & Surgeons	9,608	23,264	13,656	16,468	28,714	12,246	7,303	5,374
Dentists & Dental Surgeons	1,741	3,231	1,490	2,001	4,038	2,037	323	708
Pharmacists	1,939	3,102	1,163	2,801	4,083	1,282	959	1,282
Allied Health Professionals	**32,556**	**45,861**	**13,305**	**45,052**	**115,821**	**70,769**	**24,168**	**30,190**
Physiotherapists & Occupational Therapists	410	634	224	413	2,829	2,416	291	708
Radiographers	422	791	369	645	2,013	1,368	348	637
Health Inspectors	1,425	1,812	387	1,549	4,109	2,560	403	746
Med. Assts. & Med. Lab. Technologists	5,392	7,903	2,511	7,334	16,770	9,436	3,221	6,216
Dental Paramedics & Auxiliary	2,720	2,870	150	3,537	6,406	2,869	1,522	1,909
Pharmaceutical Assistants	1,872	2,401	529	2,205	5,274	3,069	525	595
Nurses[2]	20,315	29,450	9,135	29,369	78,420	49,051	17,858	19,379
School Teachers	**245,352**	**306,586**	**61,234**	**298,083**	**349,086**	**51,003**	**69,073**	**51,003**
Pre-school	22,462	36,327	13,865	34,271	57,307	23,036		23,036
Primary	135,790	154,111	18,321	154,920	166,115	11,195	34,528[3]	11,195
Secondary	87,100	116,148	29,048	108,892	125,664	16,772	34,545	16,772

Notes:

[1] Output refers to graduates from local public tertiary institutions.

[2] Nurses include community nurses.

[3] Output include both pre-school and primary school teachers.

4.19 Efforts to build up indigenous scientific and technological capability resulted in an increase of research and development (R&D) personnel from 5.1 per 10,000 labour force in 1996 to 7.0 in 1998. This ratio of R&D personnel is low compared with Singapore at 66 per 10,000 labour force in 1998, Japan at 132 per 10,000 in 1997 and United Kingdom at 95 per 10,000 in 1995. However, in terms of the total number, there was an improvement from 9,230 in 1996 to 12,130 in 1998.

4.20 During the Plan period, workers in the *administrative and managerial* category continued to register the highest rate of growth of 8.8 per cent per annum, accounting for 389,400 jobs in 2000 due to the expansion of modern services, especially in ICT-related areas. The jobs generated were mainly in specialized fields such as finance and ICT. The share of this category to total employment also increased from 3.2 per cent in 1995 to 4.2 per cent in 2000.

4.21 The *production and related workers* category continued to form the largest group among the major occupational categories. This category, both skilled and unskilled, constituted 32.8 per cent of total employment in 2000, compared with 33.9 per cent in 1995. The economic crisis and the resultant excess capacity adversely affected the growth in demand for production and related workers. During the Plan period, more than one third of the retrenched workers were in this category. However, despite this retrenchment and an increase in the adoption of labour-saving production techniques, the average annual growth rate of this category was 2.3 per cent.

4.22 The demand for *service workers* grew at an average rate of 4.3 per cent per annum, accounting for 206,100 new jobs or 16.2 per cent of the total net job creation during the Plan period. The increase in demand for service workers was due to the improved performance of the wholesale and retail trade, hotels and restaurants as well as transport, storage and communications subsectors during the later half of the Plan period. The share of service workers category increased from 11.1 per cent of total employment in 1995 to 11.8 per cent in 2000.

4.23 The demand for *clerical and related workers* recorded an increase of 3.4 per cent per annum during the Plan period despite the move towards greater automation. This category accounted for 12.4 per cent of the total net job creation or 157,200 jobs. The *sales workers* category grew at an average rate of 3.2 per cent per annum, accounting for 11.6 per cent or 147,900 new jobs mainly due to the increased number of departmental stores and hypermarkets.

4.24 The number of *agricultural workers* increased slightly due to reverse migration despite the continuing mechanization and modernization of the agriculture sector. The share of these workers to total employment, however, declined from 20.1 per cent in 1995 to 18.1 per cent in 2000. Nevertheless, there was still a demand for agricultural workers in activities such as the maintenance of golf courses, recreational parks and in agro-tourism.

Wages and Productivity

4.25 Overall labour productivity improved especially towards the end of the Plan period due to the rationalization of operations. Labour productivity in the *manufacturing sector,* as measured by Gross Domestic Product per worker, improved towards the end of the Plan period mainly due to the increased utilization of excess capacity. Productivity grew at an average annual rate of 1.6 per cent contributed by the shift towards high technology production processes and increase in labour efficiency.

4.26 Although the *agriculture sector* continued to experience labour shortage, labour productivity in the sector grew favourably by 1.5 per cent over the Plan period. This growth resulted from initiatives such as improved farm management, better agronomic practices, integrated farming and mechanization. In the *services sector*, the transport, storage and communications subsector recorded the highest productivity growth averaging 3.0 per cent for the period, followed by the Government services subsector, which grew by 2.9 per cent.

4.27 The labour market was tight during the first half of the Plan period, which resulted in continued upward pressure in wages. Towards the latter half of the period, however, wage pressures were subdued despite the economic recovery. Based on the Monthly Survey of Manufacturing Industries published by the DOS, salaries and wages per employee increased at an average rate of 9.3 per cent during the first half of the Plan period and 3.2 per cent during the last two years. Salaries and wages per employee, thus increased at an average rate of 6.8 per cent per annum. Similarly, labour productivity as indicated by sales value per employee increased, averaging 10.4 per cent per annum for the Plan period, with an 8.5 per cent growth during the first half and 13.2 per cent during the last two years. Consequently, the higher increase in labour productivity compared with increases in wages led to a decline in unit labour cost by 3.2 per cent, indicating improvements in competitiveness. The World Competitiveness Yearbook,

an annual report that ranks and analyses the ability of nations to provide an environment in which enterprises can compete, placed Malaysia third among 47 industrialized and emerging economies in terms of labour cost in 2000. This reflected an improvement from the position in 1995 when Malaysia was placed fifth among 26 countries.

Human Resource Development

4.28 During the Plan period, human resource development continued to be given priority in support of the implementation of a productivity-driven growth, which required highly skilled, trainable and knowledge manpower. Emphasis continued to be given to increase accessibility to education at all levels in line with the democratization of the education policy. In addition, the education and training programmes focused on improving the quality of teaching and learning materials, teacher training and educational support services.

4.29 At the tertiary level, the capacity of public tertiary institutions expanded substantially. However, it was still inadequate to meet the demand. Consequently, enrolment in private education and training institutions also expanded significantly, which was facilitated by the liberalization of the education sector.

Education Programmes

4.30 The thrusts of the education programmes during the Plan period were to increase accessibility, strengthen the delivery system and improve the quality of education. Additional facilities were provided while existing facilities were expanded to increase the absorptive capacity as well as create a conducive teaching and learning environment. Besides focusing on capacity expansion and quality enhancement, the inculcation of good values and positive attitudes among students was also stressed in the curricular and co-curricular activities. Concerted efforts to increase accessibility resulted in increased enrolment at all levels, as shown in *Table 4-5*.

4.31 At the *pre-school education* level, a total of 399,980 children enrolled in pre-school centres in 2000, representing 63.7 per cent of children in the 5-6 age cohort. The Guidelines on Pre-school Curriculum were established to standardize the curriculum, facilities and teacher training in both public and

TABLE 4-5

STUDENT ENROLMENT[1] IN LOCAL PUBLIC INSTITUTIONS, 1995-2005

Level of Education	*1995*	*%*	*2000*	*%*	*2005*	*%*	*Increase (%)*	
							7MP	*8MP*
Pre-school	**253,675**	***5.1***	**399,980**	***7.0***	**549,000**	***8.4***	***57.7***	***37.3***
Primary	**2,799,359**	***56.6***	**2,945,906**	***51.7***	**3,035,018**	***46.3***	***5.2***	***3.0***
Lower Secondary	**1,124,910**	***22.8***	**1,245,523**	***21.8***	**1,364,153**	***20.8***	***10.7***	***9.5***
Government & Government-aided Schools	1,122,180		1,239,563		1,348,084			
MARA Junior Science Colleges	2,730		5,960		16,069			
Upper Secondary	**502,964**	***10.2***	**697,223**	***12.2***	**921,271**	***14.0***	***38.5***	***32.3***
Government & Government-aided Schools	459,850		626,353		804,922			
MARA Junior Science Colleges	6,320		11,370		16,594			
Vocational & Technical Schools	36,794		59,500		99,755			
Post-secondary	**80,080**	***1.6***	**76,755**	***1.4***	**134,134**	***2.0***	***-4.2***	***74.8***
Government & Government-aided Schools	64,610		48,035		83,174			
Pre-diploma & Pre-university Courses	15,470		28,720		50,960			
Teacher Education (Non-graduates)	**35,410**	***0.7***	**14,460**	***0.3***	**31,310**	***0.4***	***-59.2***	***116.5***
Certificate	**13,556**	***0.3***	**28,154**	***0.5***	**88,848**	***1.4***	***107.9***	***99.8***
Diploma	**46,480**	***0.9***	**92,304**	***1.6***	**148,025**	***2.3***	***98.9***	***19.1***
Degree[2]	**87,891**	***1.8***	**201,271**	***3.5***	**289,806**	***4.4***	***129.0***	***44.0***
Total	**4,944,325**	***100.0***	**5,701,576**	***100.0***	**6,561,565**	***100.0***	***15.3***	***13.9***

Notes:

[1] Enrolment refers to total student population in that particular year at the particular level of education.

[2] Includes enrolment in first degree and post-graduate levels in public universities and *Kolej Tunku Abdul Rahman.*

private pre-school centres so that they conformed with the quality requirements as provided for in the Education Act 1996. In addition, the quality of pre-school education was further enhanced through continuous retraining of supervisors and master teachers.

4.32 *Primary education* strategies were aimed at improving accessibility, enhancing quality as well as improving teaching and learning facilities. Programmes to increase the participation rate of under-privileged groups were implemented, particularly for students from low-income families and children with special needs. Educational opportunities for children with special needs were expanded and a total of 2,050 places was provided in special primary schools and 6,890 places in special classes in mainstream schools. Educational support programmes such as scholarships, textbooks-on-loan and hostel facilities contributed towards increasing the number of students who completed primary schooling. The number of students enrolled at the primary level increased from 2.79 million in 1995 to 2.95 million in 2000, as shown in *Table 4-5*.

4.33 A total of 144 new schools was built providing 3,456 new classrooms while another 7,360 classrooms were constructed, of which 20 per cent were to replace dilapidated classrooms. These additional classrooms accommodated the increased number of students as well as provided a more conducive learning environment. The completion of these new classrooms improved the class-classroom ratio from 1:0.85 in 1995 to 1:0.90 in 2000, reducing the number of classes in the afternoon session from 19 per cent in 1995 to 15 per cent in 2000.

4.34 Efforts to reduce the performance gap between rural and urban schools were continued through the upgrading of teaching and learning facilities and placement of more trained teachers in rural schools. Continuous professional development of teachers in rural schools was also undertaken through the State Educational Resource Centres (SERC) and the Teacher Activity Centres. The Government intensified steps to merge small schools with enrolment of less than 150 students each, and prepared guidelines on the strategy of teaching and learning for these schools. In order to provide a conducive learning environment in rural schools, residential facilities were built benefiting 23,400 students including those in *Orang Asli* settlements.

4.35 The revised syllabus for Mathematics and Science introduced in 1996 was fully implemented by the end of the Plan period. In addition, a new teaching

and learning method that emphasized practical learning and the use of various teaching aids such as computers, improved textbooks and new teaching guidelines for students in Year 4, 5 and 6. Short courses were also conducted to upgrade the skills of teachers. As a result of these efforts, the passing rate in *Ujian Penilaian Sekolah Rendah* (UPSR) examination in 2000 improved compared with 1995. The passing rate for Mathematics improved from 67.9 per cent in 1995 to 75.9 per cent in 2000 and that for Science from 74.9 per cent in 1997 to 77.5 per cent in 2000.

4.36 To enhance the teaching and learning process in primary schools, the Computer Literacy Programme and computer-aided learning methods were introduced. This Programme, which initially covered 20 primary schools, was expanded to cover an additional 240 primary schools, benefiting 104,000 students by 2000. To promote awareness and usage of computers in rural schools, the private sector and individuals were encouraged to support this initiative, whereby 28 companies donated computers as well as computer-aided teaching and learning materials to these schools.

4.37 The enrolment at the *secondary education* level in Government and Government-aided schools increased by 19 per cent from 1.63 million in 1995 to 1.94 million in 2000, as shown in *Table 4-5*. This was due to the improved transition rate from primary to secondary level education. A total of 6,808 additional classrooms was built which improved class-classroom ratio from 1:0.76 in 1995 to 1:0.83 in 2000, thus reducing overcrowded classes from 14 per cent to 12 per cent, respectively.

4.38 Teaching methods were continuously revised in order to improve the achievement of students in core subjects. A guidebook on teaching and learning of science subjects was provided to all secondary school teachers. The teaching of science subjects was geared towards enhancing thinking and problem-solving abilities. To increase interest in Mathematics and Science, workshops, awareness programmes, computer-aided learning and career guidance sessions were conducted. Enrolment in the science and technical streams increased from 92,960 in 1995 to 242,470 in 2000, representing 18.5 per cent and 34.8 per cent of the total enrolment at the upper secondary level, respectively.

4.39 To improve the performance of rural students, especially in core subjects, a total of 205 science laboratories was constructed while 7,836 trained mathematics

and science teachers were deployed to rural schools. In addition, 230 computer laboratories were constructed and a total of 5,750 computers supplied to these schools. A pilot project on networking, which enhanced the usage of electronic communications among students and teachers, was implemented in 50 rural secondary schools.

4.40 During the Plan period, the conversion of secondary vocational schools (SVS) to secondary technical schools (STS) was completed. This conversion expanded the technical stream in the STS and at the same time maintained the vocational and skill streams previously offered in the SVS to accommodate low achievers in the *Penilaian Menengah Rendah* (PMR) examination. The technical stream in STS produced students with a strong foundation in technical and science subjects while the vocational and skill streams prepared students with the basic skills for employment.

4.41 A total of 59,500 students was enrolled in STS in 2000, of whom 50 per cent were in vocational and 10 per cent in the skill stream. The enrolment in the STS constituted 8.5 per cent of the total enrolment at the upper secondary level. The contextual learning concept incorporating both theoretical knowledge and practical application was implemented to improve the understanding of students in science and technical subjects. This concept improved performance in the *Sijil Pelajaran Malaysia* (SPM) examination in Mathematics, Science and engineering subjects.

4.42 *Teacher training programmes* were aimed at producing trained teachers who excelled in curricular and co-curricular activities. Towards this end, teacher training programmes were continuously improved while new courses in areas such as counselling and interpersonal skills as well as environmental education were introduced. Teacher training curriculum was also revised to incorporate the use of computer and multimedia, especially in subjects such as Mathematics, Science, *Bahasa Malaysia* and the English language.

4.43 To improve the quality as well as creativity and innovativeness of teachers, the curriculum for the training of teachers was reviewed and new electives on teaching innovation were introduced. A total of six courses was conducted for 1,720 teachers in areas such as evaluation, pedagogy and management in order to accommodate the requirements of smart schools. Of this total, 312 were mathematics and science teachers, 156 English language teachers and 156 *Bahasa Malaysia* teachers. A total of 3,070 master teachers was also trained.

4.44 During the Plan period, a total of 36,541 non-graduate teachers for primary schools was trained, of whom 24.0 per cent were mathematics teachers, 17.5 per cent were science teachers and 11.9 per cent English language teachers. Out of the 154,920 teachers, 55 per cent served in rural primary schools in 2000. In addition, efforts were undertaken to increase the number of graduate teachers in secondary schools. Towards this end, 7,390 teachers were trained under the Post-Graduate Teacher Training Programme (PTTP) and 3,120 under the *Program Khas Pensiswazahan Guru* while another 3,250 were trained under the *Program Pensiswazahan Lepasan Diploma*. The number of graduate teachers in secondary schools increased from 51 per cent or 44,830 in 1995 to 61 per cent or 69,329 by the end of 2000. Nevertheless, there was a shortage of 2.9 per cent for mathematics teachers, 6.2 per cent for science teachers and 0.2 per cent for English language teachers.

4.45 Computer networking linking 31 teacher training colleges was provided to facilitate the training of teachers specializing in ICT under the PTTP. These colleges provided the teachers with access to electronic libraries, which enhanced their knowledge and skills. Teacher training also focused on inculcating good values and positive attitudes.

4.46 Efforts were undertaken to provide housing facilities for teachers in rural areas as well as those in major urban areas such as Johor Bahru, Kuala Lumpur and Kota Kinabalu. A total of 7,185 quarters was constructed for teachers, of which 60 per cent were in the rural areas.

4.47 During the Plan period, *tertiary education* institutions were expanded to meet the increasing demand as well as to develop education as an export industry. The Government extended financial assistance to students from the low-income group to improve accessibility to higher education. As part of the strategy to develop the education sector, Malaysians were encouraged to study locally while sponsorship to foreign institutions of higher learning was limited to critical courses at reputable universities.

4.48 To further increase accessibility to higher education, the National Higher Education Fund (NHEF) was increased by RM1 billion to RM2.3 billion at the end of the Plan period. With the additional fund, financial assistance was extended to students in private institutions of higher learning. A total of 29,000 students in private institutions benefited from the Fund in 2000.

4.49 Student intake increased in public institutions of higher learning due to the expansion of their programmes and the setting up of new universities, namely *Universiti Malaysia Sabah, Universiti Malaysia Sarawak* and *Universiti Pendidikan Sultan Idris*. Three new polytechnics were also completed in Johor Bahru, Seberang Prai and Shah Alam. In addition, two city polytechnics were established in Kuala Terengganu and Melaka offering engineering and applied arts courses at certificate and diploma levels.

4.50 Enrolment at the tertiary level increased from 147,927 in 1995 to 321,729 in 2000. At the end of the Plan period, 170,794 students were enrolled at the first degree level, as shown in *Table 4-6*, while 92,304 students were at the diploma level and 28,154 at certificate level, as shown in *Table 4-7*. The enrolment in science and technical courses at the first degree level increased from 40.7 per cent in 1995 to 52.0 per cent in 2000, in line with the need for science and technology (S&T) manpower. At the diploma level, the enrolment in science and technical courses increased from 45.0 per cent to 56.8 per cent while at the certificate level, it declined from 83.1 per cent to 77.5 per cent, respectively.

4.51 Enrolment doubled in courses such as medicine and dentistry, engineering, architecture, survey and town planning, in line with the target to achieve the 60:40 ratio of science to arts enrolment. Enrolment in ICT courses in public higher learning institutions increased from 3,770 students in 1995 to 15,050 students in 2000. About one third of private institutions conducted ICT-related courses with an enrolment of 49,040 students in 2000, concentrating on courses in basic computer literacy and software applications.

4.52 The absorptive capacity of public institutions was relatively small compared with the number of qualified candidates. Thus, to address this shortfall, the Government established a consortium of 11 public universities, the Multimedia Technology Enhancement Operations (METEOR), to offer distance learning courses. During the Plan period, the consortium offered 25 courses in areas such as multimedia, law, business and humanities, benefiting 20,000 students. During the Plan period, the governance system of public universities was changed to include more representatives from the private sector. Public universities were allowed to generate funding from external sources based on the business plan agreed to by the institutions and the Government. Efforts were also undertaken

Table 4-6

ENROLMENT AND OUTPUT FOR FIRST DEGREE COURSES FROM LOCAL PUBLIC EDUCATIONAL INSTITUTIONS, 1995-2005

Course	*Enrolment*						*Increase (%)*		*Output*			
	1995	*%*	*2000*	*%*	*2005*	*%*	*7MP*	*8MP*	*7MP*	*%*	*8MP*	*%*
Arts	**44,886**	***59.3***	**81,914**	***48.0***	**103,846**	***42.5***	***82.5***	***26.8***	**78,433**	***57.7***	**134,764**	***46.1***
Arts & Humanities[1]	22,262		40,130		48,208		*80.3*	*20.1*	40,612		64,187	
Economics & Business[2]	20,072		37,875		50,522		*88.7*	*33.4*	34,261		65,252	
Law	2,552		3,909		5,116		*53.2*	*30.9*	3,560		5,325	
Science	**18,171**	***24.0***	**49,575**	***29.0***	**71,897**	***29.4***	***172.8***	***45.0***	**34,805**	***25.6***	**91,607**	***31.3***
Medicine & Dentistry	3,738		6,908		8,656		*84.8*	*25.3*	4,019		7,716	
Agriculture & Related Sciences[3]	2,472		4,940		5,961		*99.8*	*20.7*	4,409		8,935	
Pure Sciences[4]	4,032		9,081		14,739		*125.2*	*62.3*	6,502		17,408	
Others[5]	7,929		28,646		42,541		*261.3*	*48.5*	19,875		57,548	
Technical	**12,652**	***16.7***	**39,305**	***23.0***	**68,784**	***28.1***	***210.7***	***75.0***	**22,765**	***16.7***	**66,007**	***22.6***
Engineering	9,756		31,494		57,684		*222.8*	*83.2*	16,980		53,822	
Architecture, Town Planning & Survey	1,397		4,682		7,920		*235.1*	*69.2*	3,201		8,302	
Others[6]	1,499		3,129		3,180		*108.7*	*1.6*	2,584		3,883	
Total	**75,709**	***100.0***	**170,794**	***100.0***	**244,527**	***100.0***	***125.6***	***43.2***	**136,003**	***100.0***	**292,378**	***100.0***

Notes:

[1] Includes Islamic studies, languages, literature, Malay culture, social science, library science and art & design.

[2] Includes accountancy, business management, resource economics and agri-business.

[3] Includes home science and human development.

[4] Refers to biology, chemistry, physics and mathematics.

[5] Includes pharmacy, applied science, environmental studies, food technology and science with education.

[6] Includes property management.

TABLE 4-7

ENROLMENT AND OUTPUT FOR DIPLOMA AND CERTIFICATE COURSES FROM LOCAL PUBLIC HIGHER EDUCATIONAL INSTITUTIONS, 1995-2005

Course	Enrolment						Increase (%)		Output			
	1995	%	2000	%	2005	%	7MP	8MP	7MP	%	8MP	%
DIPLOMA												
Arts	**25,558**	***55.0***	**39,871**	***43.2***	**55,961**	***37.8***	***56.0***	***40.4***	**43,206**	***56.7***	**51,449**	***41.9***
Arts & Humanities[1]	2,059		2,746		3,621		*33.4*	*31.9*	4,000		5,372	
Economics & Business[2]	23,499		37,125		52,340		*58.0*	*41.0*	39,206		46,077	
Science	**5,178**	***11.1***	**17,023**	***18.4***	**22,945**	***15.5***	***228.8***	***34.8***	**13,317**	***17.5***	**31,682**	***25.8***
Agriculture & Related Sciences[3]	2,296		2,071		2,400		*-9.8*	*15.9*	3,055		3,776	
Others[4]	2,882		14,952		20,545		*418.8*	*37.4*	10,262		27,906	
Technical	**15,744**	***33.9***	**35,410**	***38.4***	**69,119**	***46.7***	***124.9***	***95.2***	**19,636**	***25.8***	**39,603**	***32.3***
Engineering	11,513		27,419		42,879		*138.2*	*56.4*	12,466		28,608	
Architecture, Town Planning & Survey	3,845		6,710		20,711		*74.5*	*208.7*	6,152		8,978	
Others[5]	386		1,281		5,529		*231.9*	*331.6*	1,018		2,017	
Total	**46,480**	***100.0***	**92,304**	***100.0***	**148,025**	***100.0***	***98.6***	***60.4***	**76,159**	***100.0***	**122,734**	***100.0***
CERTIFICATE												
Arts	**2,289**	***16.9***	**6,325**	***22.5***	**21,434**	***24.1***	***176.3***	***238.9***	**5,494**	***55.2***	**10,831**	***60.6***
Arts & Humanities[1]	52		1,392		4,749		*2,576.9*	*241.2*	554		559	
Economics & Business[2]	2,237		4,933		16,685		*120.5*	*238.2*	4,940		10,272	
Science[4]	**592**	***4.4***	**1,008**	***3.6***	**2,110**	***2.4***	***70.3***	***109.3***	**1,873**	***18.8***	**4,433**	***24.8***
Technical	**10,675**	***78.7***	**20,821**	***73.9***	**65,304**	***73.5***	***95.0***	***213.6***	**2,582**	***26.0***	**2,610**	***14.6***
Engineering	10,320		20,396		64,516		*97.6*	*216.3*	1,163		1,935	
Architecture, Town Planning & Survey	355		425		788		*19.7*	*85.4*	1,419		675	
Total	**13,556**	***100.0***	**28,154**	***100.0***	**88,848**	***100.0***	***107.7***	***215.6***	**9,949**	***100.0***	**17,874**	***100.0***

Notes:

[1] Includes public administration, music, photography and secretarial studies.

[2] Includes accountancy, banking and hotel management & catering.

[3] Includes home science and human development.

[4] Includes computer studies, applied science and environment studies.

[5] Includes property management.

to increase public awareness on the Government's burden of financing higher education. This included disseminating information to students and parents on the actual cost of pursuing courses at the diploma and degree levels.

Skill Training Programmes

4.53 The absorptive capacity of skills training institutions expanded to meet the increasing and changing demand of industries for skilled manpower during the Plan period. A total of 187,440 skilled and semi-skilled manpower was produced by both the public and private training institutions. The output of skilled manpower from these institutions increased from 27,910 in 1995 to 44,490 in 2000 at an average annual rate of 9.8 per cent, of which 65 per cent was in the engineering trades, especially in mechanical and electrical engineering, as shown in *Table 4-8*. The output of skilled manpower in the engineering trades from public training institutions increased from 10,760 in 1995 to 17,250 in 2000.

4.54 Increased competitiveness and the use of modern and high technology production methods and processes increased the demand for highly skilled, trained and multi-skilled workers. To meet this demand, the Government built seven additional advanced skills training centres, which offered courses in specialized trades such as mechatronics, industrial engineering technology, computer engineering technology, telecommunications engineering technology, avionics engineering and multimedia development. In addition, the Japan-Malaysia Technical Institute (JMTI) increased the number of courses offered at its permanent campus at Bukit Minyak, Pulau Pinang. The total capacity of advanced skills training centres was 5,800 in 2000 including that of the German-Malaysian Institute (GMI), the British-Malaysian Institute (BMI) and the Malaysia-France Institute (MFI). At the state level, selected skills development centres (SDCs), also provided pre-employment training programmes at certificate and diploma levels, apart from skills upgrading and retraining programmes. During the Plan period, a total of 135,200 workers was trained by state SDCs, of whom 2,520 were at diploma level.

4.55 To alleviate the continued shortage of instructors, the Centre for Instructor and Advanced Skills Training (CIAST) expanded the National Instructor Training Programme (NITP) to include students with Malaysian Skill Certificate (SKM)

TABLE 4-8

OUTPUT OF SKILLED AND SEMI-SKILLED MANPOWER BY COURSE, 1995-2005
(persons)

Course	*1995*			*2000*			*2005*			*7MP*	*8MP*	*Average Annual Growth Rate (%)*	
	Public	*Private*	*Total*	*Public*	*Private*	*Total*	*Public*	*Private*	*Total*			*7MP*	*8MP*
Engineering	10,758	7,496	18,254	17,254	9,730	26,984	28,965	20,837	49,802	122,593	197,441	*8.1*	*13.0*
Mechanical	6,804	1,679	8,483	9,468	2,232	11,700	18,648	4,866	23,514	56,971	91,758	*6.6*	*15.0*
Electrical	3,734	5,743	9,477	7,364	7,378	14,742	9,685	15,721	25,406	63,643	102,496	*9.2*	*11.5*
Civil	220	74	294	422	120	542	632	250	882	1,979	3,187	*13.0*	*10.2*
Building Trades	1,792	205	1,997	1,966	547	2,513	2,600	1,200	3,800	13,415	21,601	*4.7*	*8.6*
Information & Communications Technology	450	3,764	4,214	784	7,520	8,304	2,167	9,844	12,011	28,296	45,566	*14.5*	*7.7*
Others	2,281	601	2,882	2,864	928	3,792	3,674	1,230	4,904	19,354	31,161	*5.6*	*5.3*
Skill Upgrading	563	n.a.	563	2,893	n.a.	2,893	4,651	n.a.	4,651	3,781	6,089	*38.7*	*10.0*
Total	**15,844**	**12,066**	**27,910**	**25,761**	**18,725**	**44,486**	**42,057**	**33,111**	**75,168**	**187,439**	**301,859**	***9.8***	***11.1***

Note: n.a. Not available.

Level 2 who will require only two years of training to qualify for the *Diploma Pengajar Vokasional*. In addition, the NITP increased its annual intake to 165 trainees in 2000. By the end of the Plan period, 101 instructors were trained and another 327 trainees were undergoing training. Instructors were also sent for training overseas to countries such as Germany, Japan and the United Kingdom to acquire the necessary skills.

4.56 To ensure that the level of competency acquired by trainees conform to the needs of industries, the National Vocational Training Council (NVTC) continued to develop the National Occupational Skills Standards (NOSS). By the end of the Plan period, 467 NOSS were established for various competency levels of the SKM. Of this total, 138 NOSS were for courses at Level 5 in areas such as information management, automotive and plastic engineering.

Participation of the Private Sector in Education and Training

4.57 To complement Government efforts in the provision of primary and secondary education, the private sector was encouraged to provide places at both levels. These schools adopted the National Curriculum, which included the teaching of good values and ethics as well as the preparation for public examinations. During the Plan period, enrolment at the primary and secondary levels in private schools increased from 116,510 students in 1995 to 142,920 students in 2000, of whom 14,110 were at the primary level.

4.58 With the implementation of the Private Higher Educational Institutions Act 1996, the private sector increased its involvement in the provision of tertiary education. Six private universities, namely *Universiti Multimedia*, *Universiti Tenaga Nasional*, *Universiti Teknologi Petronas*, *Universiti Tun Abdul Razak*, International Medical University and *Universiti Industri Selangor* offered courses in engineering, business studies, medicine and multimedia at the degree level. The Act also allowed foreign universities to establish branch campuses. Three institutions, namely Monash University, Australia; Curtin University of Technology, Australia; and the University of Nottingham, United Kingdom established branch campuses that offered full degree courses. By the end of the Plan period, private institutions provided a total of 32,480 places at the degree level, 116,265 at the diploma and 60,840 at certificate levels.

4.59 To ensure the healthy growth of tertiary education, the Ministry of Education (MOE) through the National Accreditation Board (LAN) and the Private Education

Department formulated 56 operational guidelines on the establishment of private institutions of higher learning. These guidelines set standards on equipment, supporting facilities and teaching staff to ensure the provision of high quality education.

4.60 Rapid technological changes and the need to enhance competitiveness required employers in all economic sectors to retrain and upgrade the skills of their workers. In this regard, the Human Resources Development Council (HRDC) intensified its efforts to further encourage employers, especially the small- and medium-scale enterprises (SMEs) to retrain their workers. In addition, the coverage of the Human Resources Development Fund (HRDF) was expanded to include firms in the energy, education and training industries. By the end of the Plan period, a total levy of RM833 million was collected by HRDF, of which RM488 million or 58.6 per cent were disbursed. A total of 2.6 million training places was approved under seven training schemes, namely the Training Grant Scheme (SBL), Approved Training Programme Scheme (PROLUS), Annual Training Plan Scheme (PLT), Agreement with Training Providers Scheme (PERLA), Apprenticeship Scheme, Training Grant Scheme for Small- and Medium-scale Enterprises Scheme (SBL-PKS) and Training Scheme for Retrenched Workers (SLPD). The SBL accounted for 80.7 per cent of total training places and 80.8 per cent of disbursement. This reflected the preference of employers for in-house training to that offered by external training providers. Technical and quality assurance and control courses constituted 40.4 per cent of approved training places while the balance were in computer-based and supervisory courses.

4.61 HRDC introduced an apprenticeship training scheme in 1996 as part of the measures to increase the supply of skilled and trained manpower. This pre-employment training scheme was an effective training approach as it involved the collaboration between employers, HRDC and training providers. By 2000, a total of 3,202 apprentices was trained with financial assistance from HRDC that amounted to RM15.9 million or 45.5 per cent of the total allocation for this scheme. Under this scheme, training was provided both at the workplace and the training institutions to meet the requirements for workers with a good combination of hands-on skills and theoretical knowledge. Due to its effectiveness, new apprenticeship schemes were introduced in areas related to ICT, plastics, wood-based, tool and die and multimodal transport operator.

4.62 The HRDC provided financial assistance to employers amounting to RM14.9 million during the Plan period for the purchase and development of training software under the Computer-based Training Scheme, and the purchase of personal computers under the Information Technology and Computer-based Training Scheme.

In addition, to assist the SMEs implement more systematic training, the HRDC introduced a Training Needs Analysis (TNA) Consultancy Scheme with an allocation of RM5 million. By the end of the Plan period, the HRDC also approved RM8.1 million under a grant, which was introduced in 1995, to support the procurement of training aids for in-house training.

4.63 A retraining scheme was introduced in 1998 to enable retrenched workers to acquire new skills at the diploma and certificate levels. A total of 891 retrenched workers benefited from this scheme, which involved financial assistance amounting to RM4.4 million. Of this total, 67.3 per cent were trained at diploma level and 32.7 per cent at certificate level with 40.6 per cent in technical and engineering trades, 38.0 per cent in management while the rest in computer-related courses.

III. PROSPECTS, 2001-2005

4.64 A trained workforce with the potential and ability to optimize the use and development of new technologies and materials will continue to be important in ensuring the growth and resilience of the economy during the Eighth Malaysia Plan. There will be increasing investment in human capital, with greater emphasis on nurturing creativity and cognitive skills to provide the impetus for the knowledge-based economy. The education and training system will be geared to produce multi-skilled and knowledge manpower that is versatile, willing to learn continuously, technopreneurial as well as with the ability to acquire and apply knowledge, particularly in modern technology.

Human Resource Policy Thrusts

4.65 Greater investment in human capital focusing on increasing the knowledge content of education and training will be made to ensure the growth and resilience of the economy. An efficient and responsive administrative and institutional framework is necessary for the optimal utilization of resources to accelerate human resource development towards achieving a developed nation status by 2020. In this regard, the policy thrusts will be as follows:

- ❏ *expanding the supply of highly skilled and knowledge manpower to support the development of a knowledge-based economy;*
- ❏ *increasing the accessibility to quality education and training to enhance income generation capabilities and quality of life;*
- ❏ *improving the quality of education and training delivery system to ensure that manpower supply is in line with technological change and market demand;*

- ❑ *promoting lifelong learning to enhance employability and productivity of the labour force;*
- ❑ *optimizing the utilization of local labour;*
- ❑ *increasing the supply of S&T manpower;*
- ❑ *accelerating the implementation of the productivity-linked wage system;*
- ❑ *strengthening labour market information system to increase labour mobility;*
- ❑ *intensifying efforts to develop and promote Malaysia as a regional centre of educational excellence; and*
- ❑ *reinforcing positive values.*

Expanding the Supply of Highly Skilled and Knowledge Manpower

4.66 Since human resource is the key factor in the development of a knowledge-based economy, concerted efforts will have to be made to increase the supply of highly skilled and knowledge manpower through the expansion of education and training. Knowledge manpower refers to those who can acquire, apply, synthesize and create knowledge. In view of the increasing need for knowledge manpower, the overall capacity of education and training institutions will be increased through the expansion and upgrading of existing institutions as well as the establishment of new institutions by the public and private sectors. In this regard, the implementation of education and training projects will be accelerated to increase the number of places to enable a higher proportion of the labour force attain tertiary education and industry experience.

4.67 The education system will be reoriented to enable students to acquire a higher level of explicit knowledge as well as thinking and entrepreneurial skills through, among others, improvements in the curriculum and teaching approach. The ability of the education system to increase the supply of knowledge manpower will depend, to a large extent, on a pool of highly trained and motivated teachers. In this regard, to attract high achievers to join the teaching profession, the remuneration package for teachers will be reviewed and improved.

4.68 The private sector is expected to intensify their involvement in the provision of education and training, especially in multidisciplinary knowledge and new disciplines such as biotechnology and bioinformatics. In view of the increasing demand for highly skilled workers to meet the requirements of more complex

production processes, more advanced skills training centres in specialized fields including two technical universities, will be established during the Plan period. Graduates with industrial skills training as well as workers with the relevant industry experience will thus, be provided with opportunities for career advancements by these skills training institutions.

Increasing Accessibility to Quality Education and Training

4.69 Efforts will continue to be undertaken to increase accessibility to education at all levels in order to enhance income generation capabilities and the quality of life. To improve the attendance and performance of students, particularly in the rural areas, priority will be given to increase the enrolment rate of the school-going age cohort. The construction of centralized schools in remote areas will also increase accessibility, thus leading to an improvement in attendance. In addition, measures will also be implemented to improve the performance of students in rural schools including the provision of adequate teaching and learning materials, infrastructure and trained teachers, thus reducing the performance gap between rural and urban students. To attract quality teachers to serve in these schools, incentives and benefits such as housing and hardship allowances will be reviewed and increased. More opportunities will also be given to disadvantaged students by improving and upgrading facilities in residential and premier schools.

4.70 At the tertiary level, the private sector will be encouraged to expand their capacity and set up new campuses to cater for the increasing number of students. The provision of loans to students in private colleges and universities will be reviewed to expand its coverage so as to ensure that the quantum commensurates with the cost of pursuing their studies. In addition, the Education Savings Scheme will be launched with a contribution of RM100 million from the Government to encourage parents to save for their children's education.

4.71 The role of the private sector in supplementing public training institutions is vital, especially in the provision of technical and industrial courses. The implementation of the Skills Development Fund (SDF) will be accelerated and its coverage extended to include trainees in private training institutions. The Government will also establish community colleges throughout the country to provide hands-on training for school drop-outs, school leavers, workers and the public.

Improving the Quality of Education and Training Delivery System

4.72 Efforts will be focused on increasing the effectiveness and efficiency of the education and training delivery system to ensure an adequate supply of high

quality manpower. To nurture creativity and innovativeness as well as thinking skills among students, the current curriculum and performance assessment of students will be reviewed. The student-centred learning approach will be strengthened. In addition, while high competency in *Bahasa Malaysia* will continue to be maintained, proficiency in the English language will be improved. More subjects will be taught using computer-based resources and multimedia technology. New subjects, courses and programmes will be designed to develop a workforce that can learn and adapt rapidly to changes in technology as well as meet the market demand for new skills. In this regard, public institutions will be given more flexibility to undertake the review and design of new courses in collaboration with the private sector. A centre to nurture innovation and creativity will also be set up for students with special talents and abilities.

4.73 To ensure training programmes are in line with the requirements of the economy, the NVTC as the coordinating and monitoring agency, will be further strengthened. In addition, the curriculum as well as teaching and learning materials will be standardized to increase cost effectiveness and ensure quality training. The skills training institutions will also increase and improve training in extra-functional skills such as communications, supervisory, management and problem-solving. Efforts to increase the supply of qualified instructors include the expansion of NITP and other instructor training programmes by CIAST, as well as the training of instructors by other advanced skills training centres, especially in new technologies. In addition, the scheme of service for instructors will be reviewed to include a better remuneration package in order to retain qualified instructors and attract more quality candidates. The apprenticeship scheme under HRDC will also be expanded to cover new areas of training such as welding, automotive electrical servicing and industrial instrumentation and control. Public training institutions will be encouraged to collaborate with industries in the apprenticeship scheme by providing training in theoretical aspects.

Promoting Lifelong Learning

4.74 Efforts will be made to develop a knowledge-seeking culture among Malaysians in view of the rapid changes in technology and the increasing knowledge intensity of the economy. Lifelong learning will be promoted to enhance productivity and employability through the use of ICT in, among others, distance learning and web-based learning to meet individual needs. More diversified courses will be offered in the distance learning programmes to cater to different levels of educational attainment and interest. Public tertiary institutions including community colleges will be encouraged to conduct more part-time courses and promote web-based learning. Support services in the form of public libraries, especially mobile

libraries will be increased. Communities in residential areas will be encouraged to pool resources to set up and maintain libraries within their localities. In addition, private companies will be encouraged to adopt and contribute to these community libraries.

Optimizing the Utilization of Local Labour

4.75 While women account for nearly half of the working age population, their participation rate is relatively low at 44.5 per cent in 2000. Efforts will, therefore, be made to increase their participation by the setting up of community nurseries and kindergartens within residential areas as well as ensuring better access to training opportunities. Teleworking, part-time work and job sharing will be encouraged to allow women, especially those who are highly educated, the flexibility of working and at the same time be a homemaker. Efforts to amend the Employment Act 1955 to include these new modes of working will be expedited. The public sector will also introduce teleworking among selected categories of public sector employees. At the same time, the retirement age will be extended to 56 years on a trial basis. In addition, pensioners with the appropriate qualifications and experience will continue to be considered for re-employment, on a case-by-case basis. Efforts will be increased to optimize the use of local labour and further reduce dependence on foreign labour. The shortening of the period of stay for foreign workers will be strictly adhered to so that firms will take positive steps to move into higher capital-intensity production processes.

Increasing the Supply of S&T Manpower

4.76 Malaysia requires a pool of S&T manpower to leverage on the new knowledge and technological advancements to achieve sustainable growth. The capacity of S&T related education and training programmes will be further expanded to expedite the achievement of the 60:40 ratio of science to arts students. This will ensure the creation of a critical mass of S&T personnel to meet the demand of a knowledge-based economy. To achieve this objective, enrolment in the S&T degree programmes in local tertiary institutions, especially at post-graduate levels will be increased. The provision of scholarships for post-graduate and post-doctoral studies as well as fellowships for graduate research under the Science and Technology Human Resources Fund will also be increased. A review of this Fund will be undertaken to attract more S&T personnel to undertake R&D activities.

4.77 S&T and industrial policies will need to be integrated with education and training policies. Local R&D capabilities, especially in institutions of higher learning will be further developed through joint R&D activities between universities and industry as well as Malaysians and foreigners. To address the shortage of

R&D personnel, efforts will be intensified to attract both foreign R&D personnel and Malaysian scientists and technologists who are working abroad to work in Malaysia on a short- or long-term basis. The ratio of R&D scientists and technologists is targeted to improve from 10 per 10,000 labour force in 2000 to 30 per 10,000 by 2005. This translates to a total of 32,810 R&D scientists and technologists that will be required to meet the demand in areas such as nanotechnology, biotechnology, photonics and fuel-cell technology. Of this number, at least 5,000 additional scientists in biotechnology and related sciences will be required in view of the increasing importance of biotechnology and related sciences in the coming decade.

Accelerating the Implementation of the Productivity-Linked Wage System

4.78 Firms will be encouraged to intensify the implementation of the productivity-linked wage system to ensure that wages are closely linked with productivity. To ensure a wider implementation of this system, a taskforce comprising representatives from the Government, employers and employees will be set up. Frequent briefings and discussions will be organized to increase awareness of the system by all parties. A feedback mechanism will also be established so that queries on the system will be resolved immediately. In this regard, the National Productivity Corporation will spearhead efforts to enhance labour productivity through the development of databases on productivity indicators and benchmarks, upgrading of local expertise, promotion of greater awareness and the adoption of best practices.

Strengthening the Labour Market Information System

4.79 Efforts will be accelerated during the Plan period to implement the electronic labour exchange, which will be a fully integrated, coherent and dynamic labour market information system. The effective distribution and dissemination of information will enable the flexible and efficient functioning of the labour market in response to changing market needs as well as ensure effective labour market monitoring. The integrated system will provide registration, monitoring and placement of workers to increase effective job matching. It will also contain a comprehensive labour market database, which will allow continuous analysis of the labour market situation, thus serving as a knowledge bank for the creation, administration and sharing of information. To ensure the effectiveness of this system, a coordinating mechanism will be established to formulate policies and strategies as well as to monitor the implementation of the system.

Developing and Promoting Malaysia as a Regional Centre of Educational Excellence

4.80 In line with the objective of becoming a regional centre of educational excellence, local public and private universities will be encouraged to establish and develop centres of excellence comparable to those in top ranking universities. These universities will be strengthened to ensure the adequacy and quality of their teaching staff as well as through the provision of well-equipped facilities. In addition, greater autonomy and flexibility will be given to public universities in their effort to strengthen their R&D capabilities. In this regard, post-graduate programmes will be expanded to include new areas and universities will be encouraged to develop their research teams as well as their areas of specialization. These universities will also be encouraged to aggressively promote their programmes abroad to attract a continuous inflow of foreign students. Appropriate incentives and simplification of the approval process of hiring lecturers will be introduced, to attract reputable foreign universities to set up branch campuses in Malaysia and offer degree programmes, especially in S&T courses and to undertake R&D activities.

Reinforcing Positive Values

4.81 Efforts will be undertaken to inculcate and reinforce positive values through the education and training system. These values including good work ethics, diligence, integrity, tolerance, gratitude, respect for authority, punctuality and pursuit of excellence are characteristics of a high quality workforce. Other values that will be emphasized include kindness, caring and neighbourliness, which are necessary to promote social harmony and cohesion. The involvement of parents, individuals and the corporate sector will complement these efforts.

4.82 With the development of a knowledge-based economy the acquisition, utilization, dissemination and management of knowledge will be more liberal and can be abused. To counter such influences, Malaysians must be inculcated with positive values from young. This can be achieved through incorporating civics education in the curriculum of moral or religious education.

Population and Labour Force

4.83 The population is estimated to reach 26.04 million by 2005, growing at an average annual rate of 2.3 per cent, as shown in *Table 4-1*. This growth rate will be lower than that of the Seventh Plan due to the continuing decline in the fertility rate as more women pursue further education and training. Non-citizens

will account for 5.3 per cent of the population, increasing at an average annual rate of 2.4 per cent.

4.84 By 2005, the share of the population in the 0-14 age group will decline to 31.3 per cent while the proportion of those aged 65 and above will increase to 4.3 per cent. The dependency ratio will decline to 55.3 per cent in 2005 while the median age of the population is estimated to be 25.3 years. Urban population is projected to increase at a rate of 3.8 per cent during the Plan period, compared with 4.8 per cent during the previous Plan. By the end of the Plan period, Bumiputera is expected to comprise 67.3 per cent, Chinese 24.5 per cent and Indian 7.2 per cent of Malaysian citizens.

4.85 The size of the labour force is expected to increase by an average annual rate of 3.1 per cent to reach 11.2 million persons, as shown in *Table 4-2*, of whom 5.1 per cent will be foreign workers. The labour force will continue to have a young age profile and is expected to be more educated and better trained. The LFPR is expected to increase to 66.6 per cent by 2005, with the rate for females rising to 46.2 per cent. The increase in teleworking opportunities will provide greater job flexibility, thus encouraging more women to join the labour force.

Employment by Sector

4.86 The favourable economic growth envisaged during the Plan period will increase employment opportunities. Employment growth at 3.2 per cent will create more than 1.6 million jobs, slightly higher than the 3.0 per cent achieved during the Seventh Plan period. The economy is expected to continue to be at full employment level with a low unemployment rate of 2.7 per cent by the end of the Plan period.

4.87 The *manufacturing sector* will continue to be the leading growth sector. Manufacturing firms will have to continue to adjust their mode of production towards greater capital- and knowledge-intensity in order to overcome the expected labour shortage. The manufacturing sector is projected to create a total of 642,000 new jobs or 40.4 per cent of the jobs created. Employment in this sector will grow at an average rate of 4.6 per cent per annum accounting for 29.5 per cent of total employment by the end of the Plan period.

4.88 The *services sector* is expected to contribute 58.0 per cent of the total net jobs created, growing at an average rate of 3.8 per cent per annum, slightly lower than that achieved during the previous Plan. This growth will be mainly contributed by the other services subsector as well as the finance, insurance, real estate and business services subsector. The high-end value-added activities within the services sector will facilitate the development of a knowledge-based economy.

4.89 The demand for labour in the *agriculture sector* is projected to further decline to 1.3 million in 2005 at an average annual rate of 1.5 per cent, thus reducing its share to 12 per cent of total employment. The agriculture sector is expected to continue to face labour constraints, declining arable land area and fluctuations in commodity prices. The future growth and competitiveness of the sector will depend on increases in productivity, better agronomic practices, innovations and technological progress.

Employment by Occupation

4.90 Demand for manpower in all occupational categories is expected to register a positive growth during the Plan period, as shown in *Table 4-3,* with the highest growth in the administrative and managerial as well as professional and technical categories. This is in response to the rapid shift towards capital-intensive and knowledge-based industries as well as the increased utilization of ICT in production processes and services. Technologically-oriented manpower with tertiary education and professional training will be required to provide industries with the comparative advantage to compete in an increasingly globalized market. Production workers, however, will continue to be a major occupational category, especially the requirement for skilled workers in the increasingly sophisticated production processes.

4.91 The *professional and technical* category is expected to register an average annual growth of 5.2 per cent during the Plan period. Its share to total employment is expected to account for 12.1 per cent by 2005. However, this share is still very low compared with the 1998 figures of some industrialized economies such as Japan at 23.2 per cent, Singapore at 26.9 per cent and United States of America at 28.5 per cent. This occupational category is expected to provide 294,200 new jobs or 18.5 per cent of the total jobs created during the Plan period. Demand for engineers and engineering assistants, especially in electrical, electronics and mechanical engineering will continue to be high as industries move towards more capital-intensive and knowledge-based production processes. An additional 52,920 engineers and 117,720 engineering assistants will be required, as shown in *Table 4-4*.

4.92 The rapid development of ICT industries as well as the application of ICT in production and service operations will lead to the emergence of new skill requirements. An additional 85,470 ICT workers will be required including system and hardware engineers, software engineers and developers, business and system analysts, computer programmers and technical support personnel during the Plan period. Of this, 11,900 workers trained in core ICT skills will be required by firms with MSC status.

4.93 The demand for medical and health professionals as well as allied health professionals is expected to increase to 36,840 and 115,820, respectively, during the Plan period. For medical and health professionals, the requirement will be especially high for general surgeons, urologists and radiologists. There will also be an increased demand for allied health professionals, especially nurses, medical assistants, laboratory technologists and pharmaceutical assistants. At the same time, these professionals will be trained in ICT-based applications and services in view of the increasing use of the Total Health Information System (THIS) application in public hospitals and clinics. However, the output from local tertiary institutions will be inadequate to meet the increased demand. Therefore, it is critical to increase the supply of students in the science stream as feeder to the medical degree programmes. More scholarships will also be provided for courses in the medical fields at the basic degree and post-graduate levels.

4.94 The *administrative and managerial* category will continue to register the highest growth at an average annual rate of 6.9 per cent during the Plan period, accounting for 9.7 per cent of the total jobs created or 153,600 new jobs. This is in tandem with the expected rapid growth of the economy, especially in banking, finance and consultancy and the use of ICT in delivering these services. The share of this category to total employment is expected to increase to 5.0 per cent in 2005.

4.95 In view of the changing structure of production towards more labour-saving processes, the demand for *production workers* category is expected to increase at a lower rate of 2.0 per cent during the Plan period. This will contribute 19.8 per cent of total net job creation or 314,400 jobs. However, as indicated by the potential employment for approved investment projects, the demand will be more for skilled production workers, especially in industries producing inputs for locally manufactured goods.

4.96 Increase in agricultural-related activities and the implementation of the Third National Agriculture Policy is expected to increase the demand for *agricultural workers*. During the Plan period, overall demand for these workers will increase at an average rate of 2.0 per cent per annum, particularly in modern agricultural-related services. The major occupations that will be in high demand are in areas such as biotechnology, aeroponics, hydroponics and organic farming.

4.97 The anticipated growth of services including tourism and hospitality, transportation, ICT and telecommunications will increase the demand for *service workers*. This demand is expected to increase by 4.2 per cent per annum during

the Plan period. Its share to total employment will increase to 12.4 per cent per annum or 1.35 million jobs by 2005. Increasing urbanization and changes in the lifestyle of Malaysians will increase the demand for service workers, especially managers, supervisors and proprietors.

Human Resource Development

4.98 Education and training programmes during the Plan period will be directed at improving quality and accessibility as well as reducing the performance gap between rural and urban areas. Education and training strategies will be aimed at producing students with broad-based knowledge, thinking skills and innovativeness to eventually contribute to the knowledge-based economy. In this regard, the education and training delivery system will be strengthened so as to create a critical mass of trained, skilled and knowledge manpower in line with technological advancements.

4.99 Public institutions will be upgraded to accommodate the increasing demand for places. In addition, the curriculum will be reviewed to increase the knowledge content and incorporate new emerging technologies. In the rural areas, teaching and learning facilities as well as educational support services will be expanded to ensure that the quality of education in these areas will be further improved. The facilities provided in the rural schools will be similar to those in the urban areas. In addition, the private sector will continue to further complement efforts of the public sector in education and training.

Education Programmes

4.100 During the Plan period, the Ministry of Education will enhance its role in the coordination of *pre-school* programmes for children in the 5-6 age cohort to ensure that its coverage is expanded from 63.7 per cent in 2000 to at least 75.0 per cent by 2005. The National Curriculum For Pre-School will be implemented and utilized by all pre-school education providers to ensure quality education. This curriculum will replace the Guidelines on Pre-School Curriculum that was issued in 1995. To ensure the successful implementation of the national curriculum, MOE, in consultation with relevant government agencies such as *Jabatan Kemajuan Masyarakat* (KEMAS) and the Department of National Unity, will determine the qualification, training programmes and the number of trained teachers as well as the teaching and learning materials and facilities required by pre-school centres.

4.101 Enrolment at the *primary education* level is expected to increase from 2.95 million students in 2000 to 3.04 million students by 2005, as shown in *Table 4-5*. To accommodate this increase and provide a better learning environment, an additional 12,380 classrooms will be built, of which 7,600 are for replacement. In line with the strategy of emplacing single session schools nationwide by 2005, the construction of new schools and classrooms will be expedited. Class-classroom ratio will also improve from 1:0.90 in 2000 to 1:0.93 by 2005 while over-crowding in urban schools is expected to be reduced from 15 per cent to 13 per cent in 2005. Steps will also be taken to reassess the food supplementary, textbooks-on-loan and financial assistance programmes to improve efficiency and ensure children from low-income families benefit from these programmes.

4.102 To improve accessibility and provide a better learning environment for students in remote areas, schools with enrolment of less than 150 students each, will be grouped in a school complex under the centralized school programme. Such school complexes, which will be implemented, particularly in Sabah and Sarawak, will be provided with hostels, quarters for teachers as well as adequate teaching and learning facilities. In addition, the Integrated School Concept where students from Year 4 to Form 5 are placed in the same school with boarding facilities, will be expanded. Similarly, the number of schools under the Vision School Concept will be increased and activities such as integration programmes for students will be instituted to strengthen national unity.

4.103 The participation rate of students in the 6-12 age cohort is expected to increase with the reduction in the attrition rate, especially among students in rural areas. In this regard, hostel facilities will be provided in small schools in remote areas. To ensure better quality education for rural schools, continued efforts will be undertaken to provide quarters for teachers to attract qualified and trained teachers. An additional 39,310 quarters will be built including 7,640 quarters for replacement.

4.104 The utilization of ICT for teaching and learning will be expanded to ensure a wider coverage of students. Efforts, therefore, will be intensified to provide computer facilities and computer-aided teaching and learning, especially in rural schools. The development of courseware for Mathematics, Science, *Bahasa Malaysia* and the English language will be intensified, while courseware for other subjects will be developed. During the Plan period, about 8,000 schools will be supplied with computers.

4.105 The implementation of the smart school project will be enhanced through the utilization of teaching and learning courseware for Mathematics, Science,

Bahasa Malaysia and the English language. The courseware, which was developed in the first phase of the smart school project, will be improved while courseware for other subjects will be developed. During the Plan period, the smart school concept will be expanded to schools equipped with computer infrastructure.

4.106 The higher transition rate from primary to *secondary level* will increase enrolment from 1.94 million students in 2000 to 2.29 million students in 2005, as shown in *Table 4-5*. A total of 7,930 classrooms will be built to accommodate these students including 3,080 classrooms to replace dilapidated facilities. Additional classrooms and new schools will also be built to fully implement single session schools. Consequently, the class-classroom ratio will improve from 1:0.83 in 2000 to 1:0.86 in 2005.

4.107 Additional teaching and learning facilities such as science and computer laboratories will be provided to meet the requirements of *Kurikulum Bersepadu Sekolah Menengah* (KBSM). These computer laboratories will be built in 2,100 schools of which 60 per cent will be in rural areas. Rural schools will also be provided with boarding facilities to provide a better learning environment. To improve the performance of students in Mathematics and Science as well as to create a critical mass of students for enrolment in S&T courses at post-secondary level, the curriculum of these subjects will be reviewed. In addition, more fully residential schools will be built to increase enrolment in the science stream.

4.108 More schools and special classes in mainstream schools will be established to enable children with special needs to have better access to education. These additional facilities will accommodate 5,320 students, thus increasing the total number of places from 12,640 in 2000 to 17,960 in 2005. They will also be allowed to join normal classes to enable them to develop their potential capabilities within the normal school environment.

4.109 In line with democratization of education, *secondary technical schools* (STS) will offer courses in the technical, vocational and skill streams to cater to students with differing abilities. The STS system will supply trained manpower and be the main feeder to the technical universities. An advisory committee with private sector participation will be established in all schools, while existing committees will be strengthened to ensure that courses are market-oriented. The enrolment in STS will increase from 59,500 in 2000 to 99,755 in 2005, representing 10.8 per cent of total enrolment at the upper secondary level by the end of the Plan period. To accommodate an increasing demand for technical education, technical electives will continue to be offered in more day and residential schools.

4.110 The Government will evaluate the requirements for *teachers* in specific subjects and ensure that teachers are deployed according to their specialization and the needs of the schools. The capacity for the training of graduate teachers at the *Universiti Pendidikan Sultan Idris* and other universities offering post-graduate training of teachers will be expanded. At the same time, incentives such as full pay study leave will be granted to teachers to encourage them to upgrade their qualifications. As a result, the number of graduate teachers in secondary schools is expected to increase from 69,329 in 2000 to 125,670 in 2005. Graduate teachers will also be deployed to teach core subjects such as Mathematics and Science at the primary level.

4.111 The teacher training curriculum will be reviewed to give special emphasis on ethics and moral values, utilization of ICT and creative teaching methods. The utilization of computers will be intensified to enable teachers to source learning materials. The SERC will continue to be the regional teacher training centres, especially to provide in-service short courses including those on pedagogy and provide appropriate teaching and learning materials. Additional incentives will be provided to attract trained and experienced teachers to serve in rural areas. These will include better allowances and the provision of 25,420 new quarters by the end of the Plan period.

4.112 During the Plan period, efforts will be intensified to further expand the absorptive capacity of public institutions of higher learning. The establishment of four new universities in Melaka, Negeri Sembilan, Pahang and Perlis will provide an additional 20,000 places at the degree level by 2005. The establishment of polytechnics in Balik Pulau, Mersing and Miri will provide an additional capacity of 10,800 students, while 10 new city polytechnics will accommodate a total of 6,000 students at the diploma and certificate levels.

4.113 The demand for *tertiary education* will continue to grow in tandem with the increase in the number of qualified students and the reducing number of students pursuing their education abroad. Total enrolment at the tertiary level in public institutions is expected to increase from 321,729 in 2000 to 526,679 in 2005, as shown in *Table 4-5*. The participation rate in tertiary education of those in the 17-23 age cohort will, thus increase from 25 per cent in 2000 to 30 per cent in 2005. At the degree level, enrolment is expected to increase from 201,271 in 2000 to 289,806 in 2005, as shown in *Table 4-5*. Of the total enrolment, 41,000 or 14 per cent will be pursuing post-graduate courses.

4.114 The Government will continue to selectively sponsor students in reputable institutions abroad, especially in new emerging technologies or courses not available locally. During the Plan period, 2,750 students will be sponsored to pursue courses in specialized areas in engineering, ICT, medicine and the sciences.

4.115 Public and private institutions will continue to be allowed to establish franchise arrangements to increase the number of places offered at the tertiary level. These arrangements will provide 45,000 additional places of which 25 per cent will be at degree level and 75 per cent at diploma level. In addition, incentives will be provided to reputable institutions to set up branch campuses, especially those offering S&T courses. The Government, through the Private Higher Educational Institutions Act 1996, will ensure that the courses and facilities are of high quality and fees affordable.

4.116 Realizing the importance of knowledge workers in the knowledge-based economy, the Government will continue to grant MSC status to qualified multimedia, ICT, engineering and related faculties of institutions of higher learning. It is expected that by 2003, a total of 25 institutions of higher learning will be granted MSC status. With this status, these institutions of higher learning will enjoy various privileges such as unrestricted employment of foreign lecturers and professionals as well as competitive telecommunications tariff rates.

4.117 Distance learning programmes will be intensified to cater for 54,000 students in 2005 compared with 36,000 students in 2000. Additional facilities will be provided at public institutions of higher learning, while existing programmes will be expanded to include a wider choice of courses. The consortium, METEOR will spearhead the accelerated implementation of distance learning programmes through the sharing of resources and the establishment of more distance learning centres as well as cooperation with existing institutions of higher learning. The private sector will be encouraged to augment the distance learning programmes.

Skill Training Programmes

4.118 Public institutions will continue to assume a major role in training skilled and technical manpower, especially in new emerging technologies. These institutions are expected to produce 42,057 skilled workers by the end of the Plan period compared with 25,761 skilled workers in 2000, as shown in *Table 4-8*. A total of 15 skills training institutes including two advanced skills training institutes under the Ministry of Human Resources, is expected to be operational with an

intake of 12,400 trainees by the end of the Plan period. These institutes will conduct courses such as mechatronics, multimedia technology and machining. Existing advanced training courses offered by public training institutes will be revised through continuous consultation with industries including SMEs, to meet the required competencies. To promote the systematic development of skill training and improve the effectiveness of the delivery system, a study will be conducted to identify an appropriate mechanism for the accreditation and recognition of qualifications awarded by training institutions.

4.119 The establishment of an additional 247 NOSS, including Levels 4 and 5, will increase the number of standardized courses in areas such as multimedia, manufacturing technology and industrial electronics. As part of the effort to transform the agriculture sector into a modern, dynamic and competitive sector, the training of skilled manpower will be given greater emphasis during the Plan period. In this regard, NOSS will be developed to strengthen training programmes in agriculture and related areas. Training opportunities and career advancements will thus be expanded. Professional bodies, industries and providers of skill training will be consulted in developing these NOSS to ensure their relevance.

4.120 The HRDF will further expand its coverage to include skill training in agriculture and other services such as for water supply, transportation and private hospital. Similarly, the SDF will finance skills training in private institutions, thus further increasing accessibility to pre-employment training.

4.121 The NITP will be expanded to meet the increasing demand for qualified instructors in public training institutions. The enrolment will be increased from 300 trainees in 2000 to 575 trainees by the end of the Plan period. In addition, the NITP will also be expanded to provide instructor training for private skill training institutes.

Participation of the Private Sector in Education and Training

4.122 The private sector will complement the Government's efforts in the provision of education and training, especially tertiary education and vocational training. At the pre-school level, programmes will be based on the National Curriculum. At the primary and secondary levels, it is expected that private institutions will continue to provide places for about 5.0 per cent of the total enrolment. To ensure quality education, private institutions will follow the National Curriculum in preparing students for public examinations.

4.123 At the post-secondary level, private institutions will continue to offer courses mainly those requiring lower capital investment such as business, commerce and applied arts. These institutions will continue to conduct courses at the diploma and certificate levels as well as those awarded by international professional bodies.

4.124 Local institutions of higher learning, which conduct twinning programmes and have credit transfer arrangements, will be in a better position to offer full degree courses through their established relationship with foreign institutions. The Government will ensure that these private institutions adhere to guidelines and standards on curriculum, teaching staff, teaching and learning facilities and the fee structure set by LAN. At the same time, the Government will expedite the approval of curriculum and validation of courses as well as ensure that quality is maintained.

4.125 In line with the objective of developing education as an export industry and promoting the growth of local tertiary education, efforts will be aggressively undertaken to promote local institutions through education fairs, seminars and conferences. Incentives will be provided to educational institutions for the promotion of education overseas. The number of foreign students is expected to increase from about 20,000 in 2000 to 25,000 by 2005.

4.126 Private sector institutions will be encouraged to offer courses relevant to the needs of industry and undertake R&D activities. To address the shortage of lecturers, private institutions will be encouraged to develop staff development programmes. Steps will also be taken to facilitate the recruitment of foreign lecturers by private institutions, while the recruitment of lecturers on a contract basis for public institutions will be continued.

IV. ALLOCATION

4.127 The development allocation for education and training programmes is shown in *Table 4-9*, which represents 20.6 per cent of the total development allocation of the Plan. This indicates the continued priority given by the Government to education and training. The combined effort by the public and private sectors will ensure that the education and training systems meet the demand for educated and trained manpower, thus contributing to the achievement of the development objectives of the nation.

TABLE 4-9

DEVELOPMENT ALLOCATION FOR EDUCATION AND TRAINING, 1996-2005
(RM million)

Programme	*7MP*		*8MP*
	Allocation	*Expenditure*	*Allocation*
Education	**17,948.5**	**17,542.2**	**18,660.0**
Pre-school	123.6	107.5	147.4
Primary Education	2,632.0	2,631.8	2,750.0
Secondary Education	5,330.1	5,317.5	4,862.6
Government & Government-aided Schools	3,860.0	3,853.7	3,262.6
MARA Junior Science Colleges	710.0	707.2	700.0
Technical & Vocational Schools	760.1	756.6	900.0
Tertiary Education	5,362.8	5,005.1	8,900.0
Teacher Education	350.0	332.5	300.0
Other Educational Support Programmes	4,150.0	4,147.8	1,700.0
Training	**2,237.3**	**2,181.9**	**4,000.0**
Industrial Training	1,876.0	1,827.0	3,760.0
Commercial Training	71.3	71.2	100.0
Management Training	290.0	283.7	140.0
Total	**20,185.8**	**19,724.1**	**22,660.0**

V. CONCLUSION

4.128 A knowledge-based economy requires a workforce with a high level of skill and educational attainment as well as the right motivation and attitude, innovation and entrepreneurial skills to leverage on the vast opportunities arising from globalization and rapid technological advancements. The human resource development thrust in the Eighth Plan will, therefore, place greater emphasis on increasing the supply of manpower equipped with the required academic, technical and extra-functional skills as well as imbued with positive attitudes and creativity. Education and training programmes will be directed towards increasing accessibility, improving quality and reducing the performance gap between rural and urban

areas. Policies pertaining to education and training will be in consonance with other development policies as human resource will be one of the enablers to achieve growth with resilience. Lifelong learning will provide a strong foundation for the creation of a knowledge-seeking society that will ensure Malaysia's competitiveness as well as realize the vision of becoming a developed nation.