

THE HUMAN RESOURCE PERSPECTIVE
TOWARDS ACHIEVING VISION 2020

**Proceedings of the National Seminar
on Human Resource Development**

*17-18 February 1992
Dewan Asajaya
Holiday Inn, Kuching, Sarawak*

And Post-National Seminar Workshop

*23 April 1992
MARA Institute of Technology
Sarawak Branch, Kuching, Sarawak*

Jointly Organised by
Ministry of Industrial Development Sarawak
and
MARA Institute of Technology,
Sarawak Branch

TRANSFORMATION OF STUDENTS TOWARDS QUALITY WORKFORCE IN ACHIEVING VISION 2020

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1. INTRODUCTION

Malaysia desires to achieve the goal of becoming a fully developed nation by the year 2020. In order to fulfil this aim, the Malaysian economy is targeted to grow at 7% per annum during the time frame of the Second Outline Perspective Plan 1991-2000. With this transformation, Malaysia is entering an era of rapid industrialization. Thus, there is a demand for high-level technical skills, management and entrepreneurial capabilities as well as increased technological development and improved capital utilization. However, one of the problems which need to be resolved is the current lack of trained and skilled manpower. According to the Second Outline Perspective Plan, human resource development will assume new importance. Competitiveness, productivity, innovativeness and capability in management of new technologies in Malaysia will be determined by the quality of her human resources. A productive and skilled labour force must be developed with strong ethical and moral values and a commitment to excellence.

Sarawak, the biggest state in Malaysia should be able to contribute towards human resource development but the educational level of the labour force particularly the indigenous labour force lags behind the educational level of the labour force for the nation as a whole and the illiteracy rate of the state is high especially in the vast rural areas. Hence, as steps are being taken under the Sixth Malaysia Plan to enhance the economic well-being of the nation, Sarawak in particular has to increase the amount of education of the labour force. According to the World Development Report 1991, the increase of the average amount of education by one year for a developing country will raise the GDP by 9%. At the lower level, the increase is even more startling, for instance, for those workforce who are illiterate, three years of education will raise the GDP by 27% but the returns to an additional year of school will diminish to about 4% a year for the next three years.

Returns to investment have generally been higher in education than in physical assets. Economic rates of return to primary education in developing countries have averaged 26%, compared with estimated returns on physical capital of 13%. This suggests that lack of education is a greater obstacle to industrialization and development than lack of physical assets.¹

As the students of today will be the labour force of tomorrow, the school system needs to produce a continuous stream of well educated, disciplined and highly motivated school leavers to ensure the success of Vision 2020. In the demanding competitive environment of an industrialized country, school leavers (Forms 3, 5 & 6) with minimum reading, mathematical and communication skills will not be able to work effectively as part of a team to solve problems or to operate sophisticated machinery. They are not able to do the job well today, let alone the jobs of tomorrow which are geared towards high value added, skills and capital intensive products. It is important

¹World Bank, World Development Report 1987, New York: Oxford University Press, (1987) p. 63.

to address this issue because at the moment even an industrialized country like the United States has discovered that most of her work force has been prepared for yesterday's work. According to the Harvard Business Review (March 1991), "Between 20-30% of the workers in the United States lack the basic skills they need for their current job to participate fully in their training programme and to implement new technology successfully." The so-called skill crisis which has already hit the United States of America will hit our nation hard if our students are not prepared to face the needs of the work force in the future as our nation aspires to make technological "leap-frogging" to be a fully developed nation by the year 2020.

This paper is an attempt to survey the constraints that affect the desired output of manpower especially in the state of Sarawak and to examine alternative solutions for the transformation of the present students into quality workforce of tomorrow.

2. CONSTRAINTS

2.1 Physical/Environmental Constraints

Sarawak measuring 124,450 square kilometres, is the largest state in Malaysia. This is 37 percent of the land area of Malaysia of about 336,700 square kilometres. Physically, the state may be broadly divided into three main areas: the alluvial coastal plains, the mountainous interior and the central belt of generally undulating country between the coastal plains and the mountainous interior. With an estimated population of 1.67 million in 1990, Sarawak is divided into nine administrative divisions namely Kuching Division, Sri Aman Division, Sibul Division, Sarikei Division, Miri Division, Limbang Division, Kapit Division, Samarahan Division and Bintulu Division.

There is an uneven distribution of population in Sarawak. According to the 1990 Annual Statistical Bulletin, 46.8% of the total population are in the urban areas of Kuching, Sibul, Miri and Bintulu leaving the rest of the population very unevenly distributed over the vast areas of Sarawak. This means that there is a very low density of population especially in the interior areas. According to the Malaysia Year Book of Statistics 1989, the population density of Sarawak in 1980 was only 11 persons per square km. which was the lowest in the country. In comparison, the population density for Sabah was 14 persons per square km., for Peninsula Malaysia, 87 persons and for the whole nation of Malaysia, 42 persons.

As part of the programme to encourage investment and industrial development, industrial estates have been established in Sarawak. The development of industrial estates is undertaken by the Sarawak Economic Development Corporation (SEDC) and the Bintulu Development Authority (BDA). The estates serve to provide industrial land for the purpose of expansion or resiting of existing light industries. The development of industrial estates includes the construction of basic infrastructure such as roads, drains, bridge, installation of water and electricity supply and telephone facilities. However, according to the MIDA as at 1 July 1990, only five of the seven existing industrial estates in Sarawak have been fully developed. These industrial estates are located in the main towns of Sarawak which are far from the rural/interior areas.

According to the Education Department of Sarawak, the State is divided into five localities for the classification of schools. The classification is made for processing the applications for the transfer of secondary school teachers in the State. The five localities are defined as follows:

Urban: Schools in the urban locality are defined as schools located in the main towns which have become the most popular places of reference to the majority of the teachers and are very well equipped with facilities either in the schools or the towns concerned.

Sub-Urban: Schools in the sub-urban locality are defined as schools which are located in the major towns other than those in the urban locality which have become the second most popular places of reference of the teachers and are well equipped with facilities either in the schools or the towns concerned.

Rural: Schools in the rural locality are defined as schools which are located outside the classification of urban and sub-urban localities with moderate facilities either in the schools or the towns concerned.

Interior I: Schools in Interior I are defined as schools located in areas outside the district administrative centres with poor communication facilities even though facilities in the schools concerned are well equipped.

Interior II: Schools in Interior II are defined as those located outside the area defined under Interior I. They are not very isolated (such as the conditions in primary schools) and can still be reached by various modes of transportation. From the aspect of place of reference, schools in this location are seldom picked and the number of teachers who are applying to be transferred out is large.

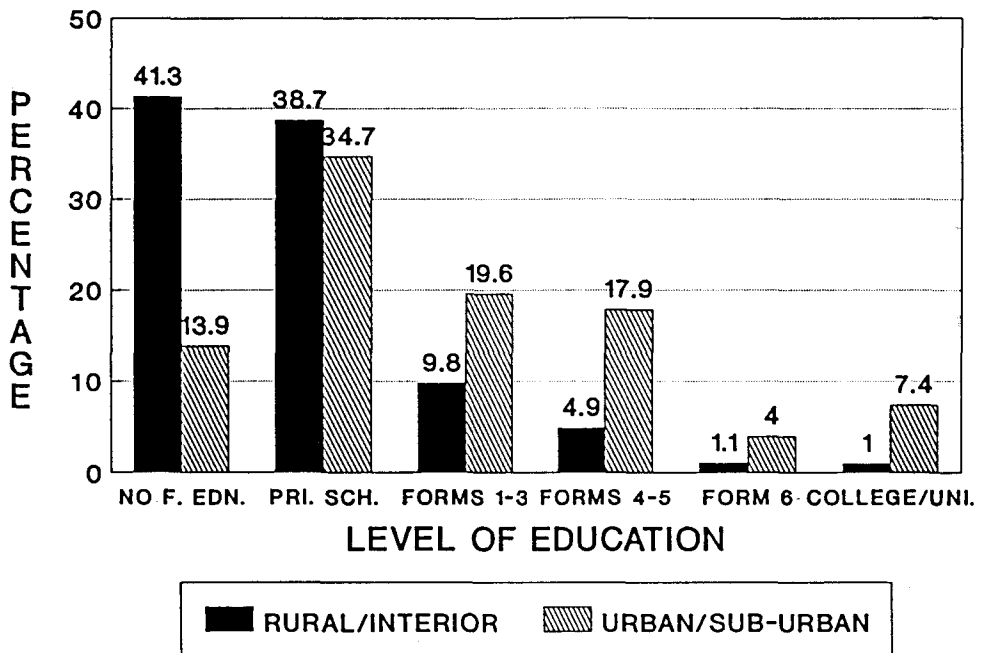
The physical facilities of some schools in Sarawak leave much to be desired. The School Mapping Study in Sarawak (1986 - 1989) by Educational Planning and Research Division, (Ministry of Education) stated that in 1987, 67% of the structures of secondary schools were permanent buildings, 26% were semi-permanent, wooden buildings with cemented floors and 7% were temporary buildings built entirely of wood. In addition, 73% of the schools were in good condition whereas 24.8% were in partially dilapidated condition, and less than one percent were in dilapidated condition. Out of the 83 secondary school hostels, 56.6% were in good condition while 42.2% were in partially dilapidated condition. Thus, it is not surprising that in some schools, the dining halls are also used as multi-purpose halls for school assemblies and games. In addition, some schools do not even have proper staff-rooms for the teachers and in some cases, no room is allocated for the library which stock very limited number of books, mostly outdated.

2.2 Human Resources

According to the Vital Statistics of Sarawak 1990 (Department of Statistics), the total population of Sarawak in 1990 is estimated to be 1,670,344. Of this total, 35.4% are in the 0-14 years age group, 60.0% are in the 15-64 years age group and 4.6% are in the 65 years and above age group. Although the labour force is defined within the 15-64 years age group, there is also a substantial number outside this age group who are unpaid family workers. According to the 1990 Sarawak Statistical Bulletin, Sarawak has a labour force participation rate of 77.4% in 1990 compared to the national figure of 58.8%. This national figure is projected to reach 60.8% in the year 2000. This shows that in Sarawak, there is a higher percentage of labour force participation. Although more people in Sarawak are gainfully employed, they are confined mainly to the primary sector which is highly labour intensive, requiring little skill. These people are also poorly paid. In fact, 47.1% of the labour force in 1990 are in the Agriculture, Forestry, Hunting and Fishing industrial group.

The educational level of the labour force particularly the indigenous labour force lags behind the educational level of the labour force for the nation as a whole. In Malaysia as a whole, 5.1% of the labour force were educated up to university/college level in 1988 while the corresponding figure for Sarawak was only 3.4% which increased to only 3.8% in 1990. On the other hand, at the lower end of the manpower spectrum, 23.9% of the labour force in Sarawak in 1988 had no formal education while the corresponding national figure was 11.7%. The figure for Sarawak improved slightly to 21.6% in 1990. However, among the Bumiputeras, the percentage of labour force with no formal education in 1990 was 29.2% compared to only 3.1% of the Chinese.

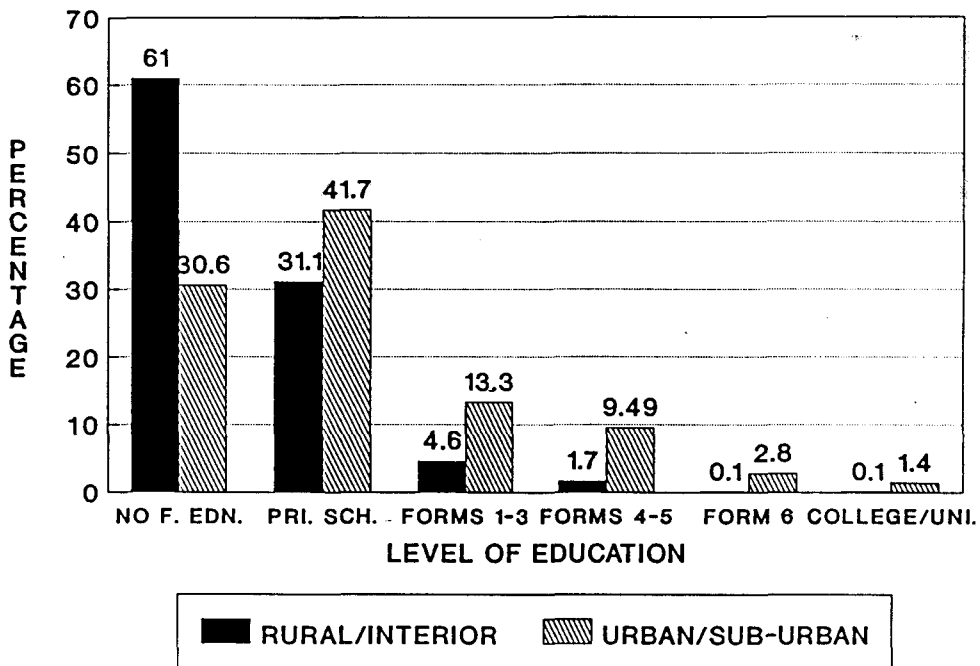
CHART 1: LEVEL OF EDUCATION - FATHER



Further data on the level of education of the present labour force by locality in Sarawak is shown in the survey of the awareness of students which covered the educational attainment of their parents. The educational attainment of the parents of the students are shown in Charts 1 and 2. 41.3% of the fathers of the students in the rural/interior areas have no formal education and only 1.1% have up to Form 6 education. In the urban/sub-urban areas, 7.4% have up to college or university education. The majority (61%) of the mothers in the rural and interior areas have no formal education and only 1.7% have Forms 4 to 5 education. On the other hand, 30.6% of the mothers in the urban/sub-urban areas have no formal education and 1.4% have college or university education. This shows that there are disparities due to sex in the education available to and utilized by men and women. The percentage of the fathers with formal education is definitely higher than that of the mothers. The difference is more distinct in the rural/interior areas than in the urban/sub-urban areas. This may be due to the fact that girls start work very early in trade or agricultural production and as the family cannot afford to do without their economic contribution, they are kept away from schools. In the past, women's chances of employment on the labour market were much worse than men's so their parents find it less worthwhile to finance or encourage their schooling. There is a need therefore to raise the educational level of the women as it can improve the health and life expectancy of the children and create the incentive for reducing the family size so that all the children can be given individual attention.

Human resource planning is concerned with motivating people which in turn depends on the job satisfaction of the people. Where education is concerned, teachers play a very important role but are they becoming less professional and merely work to earn a living? The recent survey of the teachers which is part of the survey on awareness of the students show that on the whole, 61.0% of the teachers are happy or contented at their place of work. The majority (55.8%) of the transferred teachers are happy or satisfied with their place of work compared to 66.8% of the

CHART 2: LEVEL OF EDUCATION - MOTHER



teachers who are not transferred. Although quite a large percentage (33.2%) of the teachers are staying in their own hometown, they are not happy or satisfied. With regards to the locality, 71.1% of those in the urban/sub-urban areas are happy or contented compared to 53.4% of their counterpart in the rural/interior areas. Moreover, those teachers with more experience in teaching are more contented as 80.2% of those with more than ten years of experience have stated that they are contented compared to 53.3% of those with less than three years of experience.

Many reasons have been given by those teachers who are not happy. The following are some of the reasons given in descending order of frequency cited by the teachers in the rural/interior areas.

1. The expenditure required to return to place of origin is too high.
2. The cost of living is too high.
3. The lack of exposure to current affairs due to inaccessibility, high cost of newspapers (which may be outdated) or lack of power supply to operate the radios or televisions.
4. The hardship allowance given is insufficient.
5. Lack of avenue for recreational and entertainment facilities especially in the isolated rural/interior areas.
6. Serving for too long at the present place.

Job dissatisfaction or frustration can affect the teachers' motivation level which in turn may lead to low productivity in their work. In order for the teachers to discharge their responsibilities optimally, they need to be highly motivated. Hence, in the survey carried out, the teachers were asked to complete a set of questionnaires in which they had to indicate their general level of motivation according to the five point scale shown below:

1-----2-----3-----4-----5
 VERY LOW LOW AVERAGE HIGH VERY HIGH

On the whole the mean score of the motivation level of the teachers is 3.58 with a coefficient of variation of 18.3% which shows that their level of motivation is between average and high. The mean score for those who are married is 3.54 and those who are single is 3.61. This shows that the marital status of the teachers does not make any significant difference to their level of motivation. However, the degree holders score a mean of 3.21 and non-degree holders score a mean of 2.20. This shows a very significant difference as the non-degree holders have a motivation level of between average and low, ranging significantly lower than that of the degree holders.

The number of years of teaching experience does not show any significant difference but only a very slight drop as the number of years of teaching experience increases. For those with less than 5 years of experience, the mean score is 3.60, for those with 5 to less than 10 years of experience, the mean score is 3.57 and those with 10 and above years of experience have a mean score of 3.51.

There is a very weak positive correlation of 0.208 between the age of the teachers and their level of motivation. Initially, the mean score increases from 3.29 at the beginning to 3.63 at the age of 30 after which the mean score declines yearly to 3.33. In other words, those teachers who are less than 30 years of age have a mean score of 3.61 whereas those who are 40 and above years of age have a mean score of 3.45. Although there is no significant difference, there is definitely a slight drop. This implies that the younger and less experienced teachers are more motivated whereas the older and more experienced teachers are slightly less motivated. When the teachers start work initially, their primary needs are met. Hence, they are motivated. As the years passed, they have secondary needs such as having a home of a more permanent nature instead of living quarters, meeting family commitments and having better educational facilities for their children. If these needs are not met, they tend to become less motivated.

The teachers were asked to rate seven variables which affect their morale and motivation on a five point scale. The mean scores of the variables are shown in Table 1.

1-----2-----3-----4-----5
 VERY UNSATIS- UNSATIS- AVERAGE GOOD EXCELLENT
 FACTORY FACTORY

The teachers in the rural/interior areas are significantly more contented with the Two Tier Salary Scheme as they have rated it between average and good with a mean score of 3.24 while their urban/sub-urban counterparts have rated it as only average and 29.4% of them are not satisfied with it.

On the whole, all the teachers have a mean rating of 3.04 for the School Management which is rather mediocre. About 22% of the teachers from the urban/sub-urban areas and rural/interior areas have rated the School Management as average or below average and the opinion is quite unanimous as there is no significant difference in their opinion with regard to the locality. Inefficient management of the school can hamper productivity of the teachers which indirectly affects the teachers' performance. Hence, the problem of poor School Management needs to be addressed by the relevant authorities.

The working condition has been rated by all the teachers with a mean rating of 3.17 which is just above average. This is no significant difference in the mean rating between teachers in the urban/sub-urban areas and rural/interior areas. This shows that there is still plenty of room for the working condition of all the schools to be improved.

On the other hand, the condition of living quarters is significantly worse off in the rural/interior areas than in the urban/sub-urban areas as the teachers in the rural/interior areas have a mean

rating of 2.82 which is below average while the teachers in the urban/sub-urban areas have a mean rating of 3.57 which is between average and good. Thus the condition of living quarters leaves much to be desired and if not rectified, it can hinder the teachers from discharging their duties effectively especially in the rural/interior areas. However, there are some living quarters (30.3%) in the rural/interior areas which have been rated as either good or excellent while only 19.1% [sic] in the urban/sub-urban areas have been rated as very unsatisfactory. "Teachers' quarters are a much needed and necessary facility. In 1987, teachers' quarters in 86 (71.07%) schools were in good condition while teachers' quarters in 33 (27.27%) schools were in partially dilapidated condition."²

TABLE 1
MEAN SCORE OF THE RATING OF ISSUES IN THE TEACHING PROFESSION

VARIABLE		MEAN SCORE	STANDARD DEVIATION	COEFFICIENT OF VARIATION	Z TEST STATISTIC
TWO TIER SALARY SCHEME	URBAN/ SUB-URBAN	3.02	1.104	36.56%	Z = 2 SIGNIFICANT AT $\alpha = 0.10$
	RURAL/ INTERIOR	3.24	1.040	32.15%	
SCHOOL MANAGEMENT	URBAN/ SUB-URBAN	3.03	0.902	29.77%	Z = 0.23 NOT SIGNIFICANT
	RURAL/ INTERIOR	3.05	0.928	30.43%	
WORKING CONDITION	URBAN/ SUB-URBAN	3.16	0.855	27.03%	Z = 0.19 NOT SIGNIFICANT
	RURAL/ INTERIOR	3.18	0.830	26.12%	
CONDITION OF LIVING QUARTERS	URBAN/ SUB-URBAN	3.57	0.839	23.50%	Z = 8.01 SIGNIFICANT $\alpha = 0.01$
	RURAL/ INTERIOR	2.82	1.141	40.50%	
DISCIPLINE OF THE STUDENTS	URBAN/ SUB-URBAN	2.72	0.913	33.57%	Z = 2.37 SIGNIFICANT AT $\alpha = 0.01$
	RURAL/ INTERIOR	2.52	0.943	37.47%	
NATIONAL INTEGRATION POLICY	URBAN/ SUB-URBAN	3.18	0.831	26.15%	Z = 0.38 NOT SIGNIFICANT
	RURAL/ INTERIOR	3.21	0.791	24.66%	
HOPE FOR THE FUTURE	URBAN/ SUB-URBAN	3.17	0.956	30.14%	Z = 1.78 NOT SIGNIFICANT
	RURAL/ INTERIOR	3.33	0.901	27.07%	

²Educational Planning and Research Division, Ministry of Education Malaysia, *School Mapping Study in Sarawak 1986-1989*, Eighth World Bank Loan, (1989) p. 99.

On the whole the student discipline has been rated with a mean score of 2.61 which is quite unsatisfactory. In addition, the mean rating of student discipline in the rural/interior areas is 2.51 which is significantly worse than that in the urban/sub-urban areas. However, there is a high coefficient of variation of 37.47% in the rating of students in the rural/interior areas which implies a wide variation of rating. This is indicated by the fact that 14.1% of the teachers in the rural areas have rated the student discipline as good while 17.7% have rated the student discipline as unsatisfactory [sic].

All the teachers generally feel that the set up of the school system does promote National Integration even though the overall mean rating is 3.19 which is above average. However, in the rural/interior areas, the mean rating given by the teachers is 3.21 which is slightly better than that of 3.18 given by those teachers in the urban/sub-urban areas. Perhaps the socio-economic conditions in the urban/sub-urban areas do not provide an atmosphere or opportunity to inculcate community spirit like in the rural/interior community. This is consistent with the fact that in the rural/interior community, the students tend to speak more Bahasa Malaysia which is a unifying factor between the various ethnic groups.

Generally, 'Hope for the Future' has been given an overall mean rating of 3.26 which is not too optimistic. Teachers in the rural/interior areas express slightly higher degree of optimism than their urban/sub-urban counterpart as 48.2% of them regard their hope for the future as good or excellent while only 39.4% of their urban/sub-urban counterpart feel the same.

2.3 Socio-Economic Constraints

The Sixth Malaysia Plan aims to promote national integration through the eradication of poverty especially in the rural areas. According to the Second Outline Perspective Plan, the incidence of poverty at the national level had gone down from 42.4% in 1976 to 17.1% in 1990 and in Sarawak, the incidence of poverty had gone down from 65.5% in 1976 to 21.0% in 1990. Despite the progress made in eradicating poverty, poverty is still highly concentrated within the traditional primary sectors and in the rural areas. The incidence of poverty in the rural areas of Sarawak in 1990 was 24.7% compared to only 4.9% in the urban areas. Since the Bumiputeras are predominant in the rural areas and are involved in the primary sectors, the incidence of poverty among them continues to remain high. In Sarawak, the incidence of poverty for the Bumiputeras in 1990 was 28.5% whereas the national figure was 23.8%. On the other hand, the figures for the Chinese were 4.4% and 5.5% respectively. It seems that in spite of all the efforts made by the government to reduce the rate of poverty through education, large inequalities in educational opportunities remain between different income groups, between rural and urban areas, between sexes and between and within different ethnic groups.

In order to assess the extent of poverty in Malaysia, the government has used the concept of poverty line income (PLI) to separate the poor from the non-poor. This measure is based on the norm of minimal subsistence for a fixed household size. The components include the basic consumer items such as food, clothing, rent, fuel, transportation, etc. They are updated annually using the consumer price index to reflect the changes in price level. In 1990, the PLI in Sarawak was \$552 per month for a household size of 5.2. Those households having a monthly income of less than half the PLI are classified as hard core poverty group.

In the survey on students' perception, the household income of the students are classified into four levels: hard core poverty, within poverty line income, middle class and upper middle and above. These four levels are shown in Table 2.

Table 3 below shows that the overall median income is \$300 per month which implies that 50% of the households earn less than this amount. The bottom 25% earn less than \$125 while the top 25% earn \$695 or more per month. More than half (62%) of the students come from households with income less than the poverty line income of Sarawak while slightly more than two fifths (42%)

TABLE 2
HOUSEHOLD INCOME LEVEL CLASSIFICATION

INCOME LEVEL		IMPLICATION
I	< \$300	Hard core poverty
II	\$300 & < \$500	Within poverty line income
III	\$500 & < \$1000	Middle class
IV	\$1000 & above	Upper middle class and above

come from families living in the condition of hard core poverty. This exceeds the poverty line income rate of 21% in 1990 for Sarawak as a whole. The corresponding figure for Peninsula Malaysia as a whole is only 15% for a poverty line income of \$370 for an average family size of 5.1.

The breakdown of analysis by ethnic group shows that the group most affected by poverty is the Bumiputeras which has a median household income of \$157.89 per month. This implies that 50% of this ethnic group has household income of less than \$157.89 per month. Among the Bumiputeras, the Kelabit and the Kadayan have the highest median income of \$450.00 per month and the Kenyah has the least of \$81.40 per month only. On the other hand, the Chinese has a median income of \$601.29 per month and the Malay has a median income of \$463.79 per month.

By locality, the median income in the rural/interior areas is \$157.87 per month compared with \$542.36 in the urban/sub-urban areas.

All these could be attributed to the fact that more than half of the students' parents are self-employed, mostly involved in agricultural activities. Although 62% of the students come from households with income less than the poverty line income, it can be assumed that most of them do have income in kind from the agricultural produce. However, it would be very difficult, if not impossible, for the students coming from this stratum of society to aspire for tertiary education in the urban centres unless financial aids are provided in the form of scholarships or loans.

In spite of the rampant incidence of poverty among the natives living in the rural and interior areas, incidence of poverty also exist within other ethnic groups, such as the Chinese in the urban area albeit on a smaller scale.

TABLE 3
RACE BY MEDIAN HOUSEHOLD INCOME

RACE	MEDIAN INCOME
Overall	\$300.00
Malay	\$463.79
Other Bumiputeras	\$157.89
Chinese	\$601.29

The background of the students shows that the overall median household size is 7.3. In the rural/interior areas the median household size is 8 while that in the urban/sub-urban areas is 7.4. This shows that the families in the rural and interior areas are larger than those in the urban and sub-urban areas. Comparing the monthly family income level by the median household size, there is a steady increase in the median household size as the monthly family income decreases. The median household size of those with monthly family income of \$1000 and above is 6.1 whereas the median household size of those with monthly family income of less than \$300 is 7.6. This is shown in Table 4 below.

TABLE 4
INCOME LEVEL BY OVERALL MEDIAN HOUSEHOLD SIZE

INCOME LEVEL	MEDIAN HOUSEHOLD SIZE
< \$300	7.6
\$300 & < \$500	7.4
\$500 & < \$1000	7.1
\$1000 & ABOVE	6.1

The work sectors of the students' parents are classified according to the following sectors:

- A Working proprietors and active business partners
- B Unpaid family workers (all members of family and friends not receiving regular wages)
- C Managerial and professional
- D Technical and supervisory (e.g. nurses, draughtsmen, etc.)
- E Teachers (for schools/colleges/institutions only)
- F Clerical and related occupations (e.g. clerks, typists, stenographers, personal secretaries, sales personnel, etc.)
- G General workers (e.g. ushers, ticket sellers, drivers, telephone operators, gardeners, etc.)
- H Others

TABLE 5
LOCATION BY FATHERS' WORK SECTOR
(PERCENTAGE OF STUDENTS IN EACH LOCATION)

LOCATION	FATHERS' WORK SECTOR							
	A	B	C	D	E	F	G	H
URBAN/SUB-URBAN	8.9	27.9	7.5	16.7	5.8	7.7	16.7	8.8
RURAL/INTERIOR	2.9	74.5	2.0	5.4	2.7	3.4	7.1	1.9
OVERALL	5.4	53.2	4.3	10.1	4.0	5.2	11.1	4.8

TABLE 6
LOCATION BY MOTHERS' WORK SECTOR
(PERCENTAGE OF STUDENTS IN EACH LOCATION)

LOCATION	MOTHERS' WORK SECTOR							
	A	B	C	D	E	F	G	H
URBAN/SUB-URBAN	1.8	84.3	0.8	1.9	3.7	4.0	2.6	0.9
RURAL/INTERIOR	1.5	93.9	0.4	0.7	0.7	0.7	1.5	0.6
OVERALL	1.6	88.4	0.6	1.2	2.0	2.2	2.0	0.7

In the urban/sub-urban areas, 29.7% of the students' fathers and 84.3% of the students' mothers are unpaid family workers whereas the corresponding figures for the rural/interior areas are 74.5% and 93.9% respectively. In addition, 16.7% of the students' fathers in the urban/sub-urban areas are in the technical and supervisory sector and 16.7% are general workers. On the other hand, 7.1% of the students' fathers in the rural/interior areas are general workers and 5.4% are in the technical and supervisory sector. 8.9% of the students' fathers in the urban/sub-urban areas are either working proprietors or active business partners compared to 2.9% of the students' fathers in the rural/interior areas.

The working proprietors and active business partners sector is led by the Chinese where 17.3% of them are involved compared to 4.4% of the Malay and 1.6% of the other Bumiputeras. However, among these Bumiputeras, the Melanau lead with 16.6%.

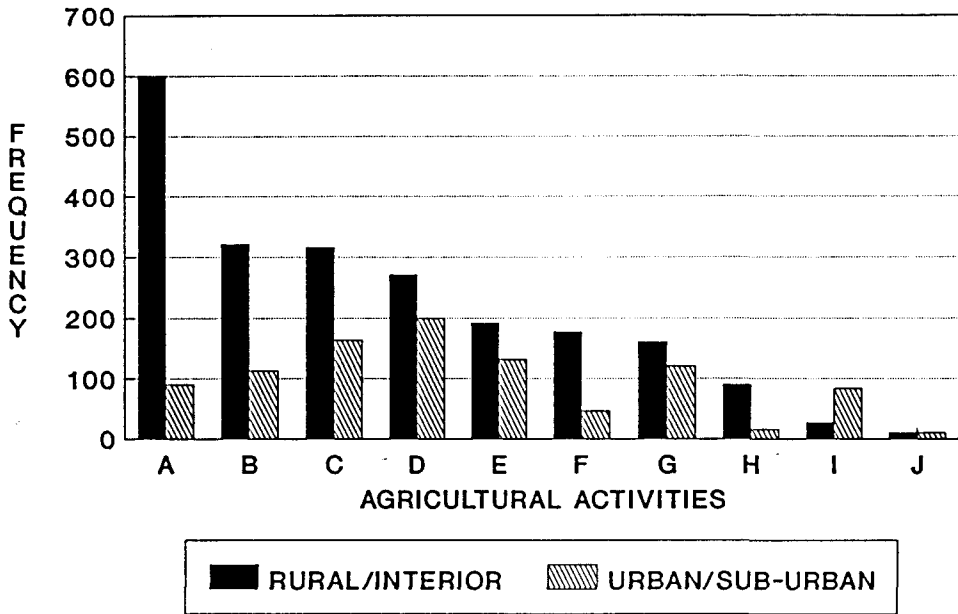
The unpaid family workers sector is dominated by the other Bumiputeras (70.6%) of which the ethnic groups with the highest involvement are the Kenyah (88.7%) and the Murut (85.4%). As a contrast, 34.3% of the Malay and only 25.5% of the Chinese are unpaid family workers. Among the Bumiputeras, the least involved is the Melanau (32.8%).

The students' fathers in the managerial and professional sector earn the highest monthly family income with a median of \$1586.96. This is followed by the teachers with a median monthly family income of \$1232.76 and those in the clerical and related occupations (\$903.57).

The unpaid family workers are mainly involved in agricultural activities as agriculture is most important to the economy of Sarawak. The main agricultural activities are dry and wet padi planting as rice is the staple food of the people. Rubber, cocoa and pepper are some of the other main crops. Chart 3 shows the comparison of the agricultural activities of the parents in the rural/interior areas and the urban/sub-urban areas. In the rural/interior areas, the three main agricultural activities are dry padi planting, wet padi planting and cocoa gardening. However, in the urban/sub-urban areas the three main agricultural activities are pepper gardening, cocoa gardening and fruit gardening.

On the whole, 83.9% of the parents in the rural/interior areas are involved in agricultural activities compared to 53.2% of the parents in the urban/sub-urban areas. Among all those involved in agricultural activities, 50% have monthly family income of \$152.48 or less and 75% have \$329.44 or less.

CHART 3
TYPES OF AGRICULTURAL ACTIVITIES



- A Dry Padi Planting
- B Wet Padi Planting
- C Cocoa Gardening
- D Pepper Gardening
- E Fruit Gardening
- F Rubber Tapping
- G Vegetable Gardening
- H Collecting of Wild Produce
- I Flower Gardening
- J Others

2.4 Cultural Constraints

Out of the total population in Sarawak of 1,670,344 in 1990, 29.5% are Ibans, 28.9% are Chinese, 20.9% are Malays, 8.4% are Bidayuhs, 5.8% are Melanaus, 5.4% are other Bumiputeras and 1.1% are others.

Out of the 1948 students who were selected at random from Forms 3, 4, 5 and 6, 665 (34.1%) were Ibans, 399 (20.5%) were Malays, 394 (20.2%) were Chinese, 471 (24.2%) were other Bumiputeras and 19 were others. The other Bumiputeras include Bidayuh, Bisayah, Kayan, Kadayan, Kelabit, Kenyah, Melanau, Murut and Penan. Chart 4 shows the comparison of the race of the students in the urban/sub-urban areas and the rural/interior areas. In the urban/sub-urban areas, there are more Chinese students (34.1%) followed by 27.5% Malay students. On the other hand, in the rural/interior areas, the Bumiputera students dominate with a total of 75% excluding the 14.6% Malay students. There are only 9.5% Chinese students here.

On the whole almost all the students (96.5%) can speak Bahasa Malaysia fluently as the schools surveyed are using Bahasa Malaysia as the medium of instruction. In addition, 97.8% of the students in the rural/interior areas can speak Bahasa Malaysia fluently compared to 94.4% of the students in the urban/sub-urban areas. This reflects the fact that Bahasa Malaysia is spoken more in the rural/interior areas than in the urban/sub-urban areas.

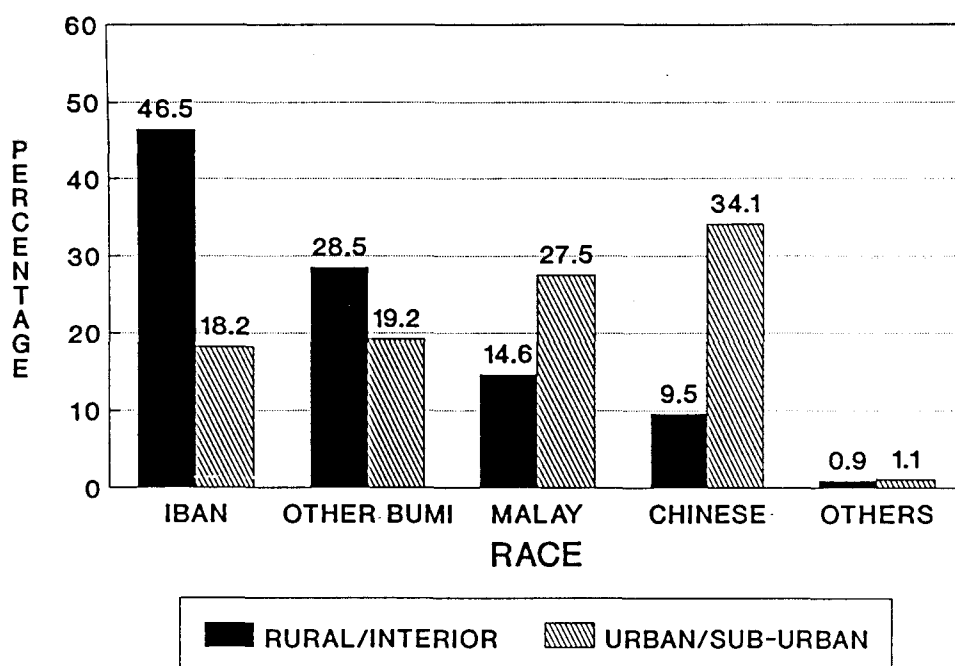
On the other hand, only 26.8% of all the students can speak English fluently. This accounts for the poor English results in public examinations. Moreover, 42.7% of the students in the urban/sub-urban areas can speak English fluently compared to only 14.6% of the students in the rural/interior areas. This may be due to the fact that students in the urban/sub-urban areas are more exposed to the use of English. For example, parents in the urban/sub-urban areas are more likely to converse with their children in English rather than in Bahasa Malaysia.

With respect to location by the number of languages that the students can speak, 20.8% of the students in the urban/sub-urban areas can speak only one language fluently, 40.4% can speak two languages, 32.8% can speak three languages and 6.0% can speak four to six languages. On the other hand, 12.1% of the students in rural/interior areas can speak only one language, 61.5% can speak two languages, 19.7% can speak three languages and 6.7% can speak four to six languages.

Table 7 shows the number of languages spoken fluently by race. One distinct character is that 57.6% of the Malay students can speak only Bahasa Malaysia, 32.3% can speak Bahasa Malaysia and a second language while only 8.3% can speak three languages. On the other hand, only 3.6% of the Iban students speak one language fluently but 72.4% of the Iban students can speak two languages fluently, probably Iban and Bahasa Malaysia, 20.3% can speak three languages and the rest can speak four to six languages fluently. Another distinct character is that only 10.2% of the Chinese students can speak one language, 41.9% can speak two languages fluently (probably Chinese and Bahasa Malaysia/English) and 44.7% can speak three languages fluently: Chinese, Bahasa Malaysia and English. The rest can speak four languages fluently.

The educational level for the students' fathers shows that the indigenous group has relatively lower level of education compared to the Chinese. 48.7% of the Iban fathers have no formal education compared to 37.0% of the other Bumiputeras, 16.7% of the Malays and only 4.2% of the Chinese. At the other extreme, only 1.7% of the Iban fathers have college/university education followed by 3.0% of the other Bumiputeras and 3.9% of the Malays compared to 8.3% of the Chinese. This is shown in the Table 8.

CHART 4: RACE OF THE STUDENTS



**TABLE 7
RACE BY NUMBER OF LANGUAGES SPOKEN FLUENTLY
(PERCENTAGE OF STUDENTS IN EACH RACE)**

RACE	NUMBER OF LANGUAGES SPOKEN FLUENTLY						
	1	2	3	4	5	6	7
IBAN	3.6	72.4	20.3	2.9	0.6	0.2	0
OTHER BUMIPUTERAS	2.6	50.0	30.9	11.9	3.4	1.1	0.4
MALAY	57.6	32.3	8.3	1.3	0.5	0	0
CHINESE	10.2	41.9	44.7	3.3	0	0	0

TABLE 8
FATHERS' EDUCATION BY ETHNIC GROUP
(PERCENTAGE OF STUDENTS IN EACH GROUP)

LEVEL OF EDUCATION	ETHNIC GROUP			
	IBAN	MALAY	OTHER BUMIPUTERAS	CHINESE
No Formal Education	48.7	16.7	37.0	4.2
Primary School	32.9	45.2	41.6	36.2
Secondary School (Forms 1 - 3)	11.1	16.4	9.1	25.0
Secondary School (Forms 4 - 5)	4.2	14.1	7.8	22.4
Secondary School (Form 6)	1.4	3.7	1.5	3.9
College/University	1.7	3.9	3.0	8.3
TOTAL	100.0	100.0	100.0	100.0

3. ALTERNATIVES

In line with the educational and human resource objectives of the Sixth Malaysia Plan and the Second Outline Perspective Plan and in the light of the present scenario of the situation at national and state level, there is a need to transform the present students into quality workforce of tomorrow to meet the human resource development challenge posed by Vision 2020. In addition, there is also a need to inculcate social and ethical values and to create a scientific and technological culture appropriate for a Malaysian model of an industrialised nation. According to Dato' Seri Rafidah Aziz, among the various qualities that need to be inculcated are discipline, diligence and dedication at work; a pure and strong sense of nationalism; trustworthiness, sense of responsibility, high 'Esprit de Corps', positive attitude, creativity and commitment for success; readiness to accept new changes and exposure, working towards self-improvement and excellence in all aspects. Various recommendations have already been put forward by government departments, agencies and academicians. However, the authors feel that the following alternatives should be suggested for the transformation based on the data collected.

3.1 Literacy Campaign

The problem of labour force having no formal education or Primary education needs to be addressed in a positive way because in 1988, they accounted for 23.9% and 33.3% of the labour force in Sarawak respectively. Collectively, these two groups account for 57% of the labour force. In addition, 55% of the Bumiputera labour force had no formal education or only Primary education in 1988. In the UNESCO approach to counter such problem, two classifications of literacy were used, namely rudimentary and functional literacy. A person who has imbibed the rudiments of literacy may be able to read street signs and posters and even decipher a letter but he still cannot read a newspaper with anything like reasonable comprehension. He has achieved a standard which a child reaches after three or four years of primary schooling and he tends to read less and less as the years go by, eventually lapsing into illiteracy. On the other hand, functional illiteracy approaches the standard of primary school-leaver after six years of formal

education. It implies the ability to read a newspaper in an hour or so, to follow a leaflet or a simple pamphlet issued by the Ministry of Agriculture, to absorb a well-written instruction manual for a technical appliance or a machine.

The UNESCO approach to help those in the group having no formal education takes about eight months of daily classes of one hour each to achieve rudimentary literacy and a further cycle of eight months to bring them to the point where literacy becomes functional. This requires trained teachers to teach elementary health instruction, technical knowledge and agricultural science. The UNESCO approach is intensive rather than extensive, selective rather than diffusive and work-oriented rather than culturally oriented. It emphasizes continuous adult education fusing into genuine vocational instruction rather than once and for all teaching of the three R's. It favours the use of diversified primers rather than single primer, in conjunction with follow-up materials embodying specific knowledge of nutrition, sanitation, industrial arts and agricultural science.

The UNESCO approach had been carried out in the third world countries, the majority of which are involved in the agricultural sub-sector. Since the majority (51.7%) of the labour force in Sarawak are in the agricultural sub-sector, the UNESCO approach is of great relevance in Sarawak. In addition, students coming from the background where their parents have no formal education (especially students from the indigenous group) tend to have low aspirations. These parents should be given the chance to acquire rudimentary and functional literacy so that they will be more exposed to current issues. As they acquire functional literacy, their social horizon widens and their expectations and aspirations also increase. This will be transmitted to their children and help them to escape from the vicious poverty circle. In addition, they can also advise and encourage their children.

3.2 Vocational training

School leavers especially those with only up to Form 3 level of education are not equipped to enter the job market. Traditionally, vocational education is looked upon as a last avenue because graduates of vocational schools are regarded as educated mechanics only. Most parents would not encourage their children to pursue vocational education which according to them involves work which is dirty, dangerous and difficult. Unlike countries like Germany, vocational studies have been regarded by some as second or third rate as it is only for those who do not perform well in the SRP or those who are SPM dropouts.

According to Dr. Fong Chan Onn in his speech at the certificate presentation ceremony of the Linton Institute of Technology in Ipoh, Malaysia will suffer if society's prejudice towards vocational skills training is not removed. The cream of the human resources in the country would stay away from this area if the society cannot be motivated to accept vocational graduates as professionals in their own right. Every skill has to be respected - be it the skill of a surgeon, a dentist, an engineer or that of a machinist, technician or mechanic. Why should society look upon a doctor or a dentist with higher esteem than a machinist, a technician or a mechanic? In many developed countries, mechanics or technicians are proud to admit their profession. However, in Malaysia, mechanics tend to hide the fact that they are mechanics because the society still regards them as second stringers to the academic achievers. If Malaysia wants to maintain and expand its share in the world market, then this attitude has to change as in future, technology will determine the competitive edge that a nation holds compared to other nations.

Perhaps it is necessary to deal with the advanced industrial society of the future with the elitization of technically skilled manpower like Korea. For this elitization, there must be creation of the social atmosphere and conditions for preferential treatment of first-rate skilled workers. These conditions include important considerations on economic aspects like pay scale, opportunity to develop oneself, and social recognition. If technicians who have little formal education and low social status master their skills and receive a technician-first class certification, they can enter the technician's colleges. Here is a way to become a master foreman through education in the needed

theoretical background and administrative skills, and one can even go further and become a manager or supervisor. Thus, even though one does not have a normal college education, one can receive the social standing of a college graduate.

In addition to the training provided by the various vocational schools in the country, perhaps some form of the "dual system" practised in Germany can be developed to provide relevant training of skills for our future workforce. According to the Harvard Business Review (March-April 1991):

Germany's 'dual system', which combines formal apprenticeship with vocational education, is extraordinarily successful. The country has the lowest rate of youth unemployment in Europe and the highest reputation for quality work. Apprenticeship is the country's largest form of upper-secondary education. Jointly operated and financed by private industry and the government, it enrolls more than 60% of Germany's 16 to 18-year-olds. German apprentices spend one day a week in school and four days on the job. In school, they take German, social studies, and specialized science and math courses related to their prospective trades. On the job, they receive minimal learner's wages. In large companies, the day's work is apt to include specialized classes. In smaller companies and shops, which do most of the training, the apprentice is usually assigned to follow one master craftsman, and instruction is informal. To ensure that every apprentice gets the same high-quality theoretical training, the schools use uniform curricula developed jointly with industry representatives. The government also maintains technical centers to supplement the training smaller employers can provide. After three years of training, and after passing both a written and a practical exam, apprentices become journeymen with credentials that are recognized and accepted throughout the country.³

At present, the rural/interior people are growing cash crops on a small basis which are barely enough to exchange for food and other necessities. Perhaps Germany's "dual system" can be modified to train some of the rural/interior students so that they can acquire the modern skills for agriculture and industry. This system can be successful if it is in line with the setting up of more small and medium scale industries which have linkages with large industries in the urban areas.

3.3 Overcoming Mismatch?

There will always be structural disequilibria in the supply and demand of skilled manpower because the time lag for supply is notoriously long ranging from 5 to 10 years whereas the demand time lag is very short - as short as 6 months. To illustrate, it takes time to produce engineers, and firms in the meantime have to solve their short term problem fast by increasing the wage for engineers or upgrading the technicians to do the work of the engineers. All these could be achieved in less than a year and by the time the institutions of higher learning produce the required number of engineers, there will be a glut or over supply. Hence, it is not possible to match in any exact way the needs of industry to the supply of people from the educational system.

The chart below is a simple illustration of the 'Mismatch' between the manpower target and the GNP target. If the manpower and GNP targets are both a HIT, there is no mismatch. However, if the manpower target is a HIT and the GNP target is a MISS, there is surplus supply of manpower but if the manpower target is a MISS and the GNP target is a HIT, there is manpower shortage.

³Nan Stone, *Does Business have any Business in Education?* Harvard Business Review, (March-April 1991) p. 58.

CHART 5: MISMATCH - GNP/MANPOWER

		GNP TARGET	
		HIT	MISS
MANPOWER TARGET	HIT	NO MISMATCH	SURPLUS MANPOWER
	MISS	SHORTAGE OF MANPOWER	BLIND SPOT

It is as important to avoid manpower surplus as manpower shortage. As there exist a time lag in the adjustment of supply of manpower of approximately 5 to 10 years, there is every chance that market forces will over shoot the equilibrium forces so that the shortage may turn into a glut. However, as earnings fall during the glut, the reverse effect takes place and so there is a dynamic adjustment process taking place all the time. Hence, there will always be structural disequilibria in the distribution of educated manpower and because of the high cost of such disequilibria, it is imperative that some central agencies should try to forecast the demand for scientific and technical manpower for at least 5 to 10 years.

Nevertheless, our country wishes to attain the status of a fully developed country by the year 2020 and according to the present statistics on manpower in other industrialized or newly industrialized economies, generally it is accepted that Malaysia requires a manufacturing sector which can constitute about 30 - 40% of the GDP and this manufacturing sector should also constitute at least 50% of the total export earnings. However, if the GNP is not a HIT, the industrial sector is not performing to expectation with less than 7% growth per year. Then the whole economy in particular the industrial sector will be sluggish and less employment will be generated. For example, in the 1975-78 recession, many civil engineers were retrenched and even at present most of them are employed on a contract basis. *"There are 3 aspects of this 'mismatch' problem: (a) unfulfilled needs i.e. the types of skills are not being supplied; (b) there is supply but it is inadequate and (c) the quality of the educated manpower is well below requirements."*⁴

These should be taken into account when planning the labour force of tomorrow. According to J.S Singh & O. Mehmet (1991), most of the graduates (59.6%) in Sarawak are currently attached to the servicing sector and only 0.2% are in the manufacturing sector. If the target is for our labour force to be equipped with skills for the manufacturing sector, then it is also necessary for the manufacturing sector to be developed.

3.4 Students' Aspiration

In the survey conducted the students were asked to state three of their ambitions in descending order of preference. On the whole, about one-fifth or 20.7% of the students select teaching as their first choice of ambition. Only 10.8% and 9.3% of them want to be doctors and accountants respectively. This is shown in Table 9 below. The technical based professions such as Engineering and Architecture rank fifth and tenth respectively in the order of popularity by the students. All these imply that the students' aspirations are not very lofty and courses in Science and Technology do not seem to be attractive to them.

⁴Zainal Azam Yusof, "Human Resources Outlook in the 1990s", Paper presented at the 1989 National Outlook Conference organised by Malaysian Institute of Economic Research, p. 23.

TABLE 9
TEN MOST POPULAR FIRST AMBITIONS OF THE STUDENTS

RANKING	AMBITION	NUMBER OF STUDENTS	PERCENTAGE OF STUDENTS
1	TEACHER	404	20.7
2	DOCTOR	211	10.8
3	ACCOUNTANT	181	9.3
4	LAWYER	169	8.7
5	ENGINEER	124	6.4
6	NURSE	83	4.3
7	POLICE	80	4.1
8	LECTURER	78	4.0
9	SOLDIER	76	3.9
10	ARCHITECT	64	3.3
TOTAL		1470	75.5

Tables 10 and 11 below show the ranking of the students' ambitions in the urban/sub-urban areas and the rural/interior areas respectively. The overall column is the sum total of the students' ambitions that gives each ambition as either their first, second or third choices. Since it is not always possible for the students to achieve their first ambition, it is quite likely that they will be able to achieve either one of their three ambitions.

The teaching profession seems to be the most popular especially in the rural/interior areas. In fact 59.3% of the students in the rural/interior areas chose to be teachers as either their first, second or third ambition compared to 40.1% of their counterparts in the urban/sub-urban areas. Evidently, the students in the rural/interior areas tend to look up to the teaching profession as the best and the most well-respected profession. Besides that, teachers also contribute a lot towards decision-making in the rural/interior communities.

The second and third ranking are accountants and businessmen respectively for students in the urban/sub-urban areas compared to police and nurses for students in the rural/interior areas. This indicates the different levels of aspiration between students in the two areas. In the urban/sub-urban areas, they are more exposed to the commercial sectors and as such they can associate with accountants or businessmen. On the other hand, in the rural/interior areas, the police and nursing professions seem to attract the students as they are associated with authority and power to help other people besides being the next best professions to teaching.

In the urban/sub-urban areas, the status of police and clerks are ranked as eighth and ninth respectively by the students. The socio-economic status of these two professions are not as highly rated as accountancy or business. On the other hand, in the rural/interior areas, professions like accountancy, engineering and lecturing are given low ranking of seven, eight and nine respectively in spite of the fact that the socio-economic status of these professions rank high in society. This could be due to the fact that in the rural/interior areas, there is hardly any opportunity for the students to meet an accountant, engineer or lecturer to know anything about their work. This also reflects the low self-esteem of the students who probably are realistic about the academic implications of such professional careers.

TABLE 10
RANKING OF STUDENTS' AMBITIONS IN THE URBAN/SUB-URBAN AREAS

RANKING	FIRST AMBITION	SECOND AMBITION	THIRD AMBITION	OVERALL
1	TEACHER	TEACHER	TEACHER	TEACHER
2	ACCOUNTANT	ACCOUNTANT	BUSINESSMAN	ACCOUNTANT
3	DOCTOR	BUSINESSMAN	ENTREPRENEUR	BUSINESSMAN
4	ENGINEER	LAWYER	POLICE	LAWYER
5	LAWYER	ENGINEER	MUSICIAN	ENGINEER/ DOCTOR
6	ARCHITECT	CLERK	CLERK	
7	LECTURER	ENTREPRENEUR	ACCOUNTANT	ENTREPRENEUR
8	BUSINESSMAN	ARCHITECT	NURSE	POLICE
9	POLICE/ ENTREPRENEUR	LECTURER	LECTURER/ LAWYER	CLERK
10		NURSE		ARCHITECT

TABLE 11
RANKING OF STUDENTS' AMBITIONS IN THE RURAL/INTERIOR AREAS

RANKING	FIRST AMBITION	SECOND AMBITION	THIRD AMBITION	OVERALL
1	TEACHER	TEACHER	TEACHER	TEACHER
2	DOCTOR	NURSE	POLICE	POLICE
3	LAWYER	CLERK	CLERK	NURSE
4	ACCOUNTANT	POLICE	NURSE	LAWYER
5	NURSE	LAWYER	ENTREPRENEUR	DOCTOR
6	SOLDIER	ENGINEER	BUSINESSMAN	CLERK
7	ENGINEER	DOCTOR	AIR-HOSTESS	ACCOUNTANT
8	POLICE	LECTURER	LAWYER	ENGINEER
9	LECTURER	BUSINESSMAN	LECTURER	LECTURER
10	MUSICIAN	ACCOUNTANT	ACCOUNTANT	SOLDIER

There will be a need for well trained technicians, computer programmers and other skill related professionals. However, only 1.2% of the students want to be technicians, 1.7% want to be computer programmers and 6.4% aspire to be engineers. This could be due to the lack of industrial environment in Sarawak and the fact that 81% of the manufacturing establishments are small, having less than 50 workers and they are mainly family run, offering very low and unattractive enumerations. The students also have the misconception that the work of technicians is lowly paid, dirty, dangerous and difficult.

There is definitely a need to promote the science and technical courses at the tertiary level especially among the students in the rural/interior areas. In addition, these students should be made aware of other available professions apart from teaching or nursing.

Table 12 below shows that the majority (52.7%) of the students opt for the servicing sector. This is followed by the commercial sector (16.7%). Only 1.2% of the students opt for the manufacturing sector. Perhaps this is due to the fact that the manufacturing sector is located mainly in the urban locality and that it accounts for only 7.7% of the labour force in 1988. However, students are also not too keen to be involved in the agricultural sector. Only 6.5% of the students indicated their desire to work in this sector which has traditionally accounted for the highest percentage of labour force (47.1% in 1990).

In general, the students seem to be attracted to the tertiary sector viz: the commercial and servicing sector. There might not be enough jobs in the tertiary sector to support them. This is because employment opportunities in the tertiary sector depend on the performance of both the primary (agricultural) and secondary sectors (manufacturing, construction, etc.). For example, taking the factory as the symbol of industrialization, the setting up of factories requires parallel service infrastructures such as transportation, distribution, communication, finance and insurance to expand in order to accommodate industrial growth. As the industrial sector grows, many services that previously were performed in-house by the industrial firms would have progressively been contracted to firms in the service sector (World Development Report, 1987, p.51). The low percentage of students wanting to be involved in the agricultural sector will lead to low agricultural productivity which in turn may hinder the industrialization process because industries require the supply of agricultural raw material and furthermore, additional foreign exchange from increased agricultural export can be used to import other inputs for industry.

TABLE 12
STUDENTS' CHOICE OF WORK SECTOR

RANKING	WORK SECTOR	NUMBER OF STUDENTS	PERCENTAGE OF STUDENTS
4	AGRICULTURE, FORESTRY, HUNTING AND FISHING	127	6.5
7	MINING AND QUARRYING	40	2.1
9	MANUFACTURING	24	1.2
3	ELECTRICITY, GAS, WATER AND SANITARY SERVICES	168	8.6
6	CONSTRUCTION	82	4.2
2	COMMERCE	325	16.7
5	TRANSPORT, STORAGE AND COMMUNICATION	91	4.7
1	SERVICES	1026	52.7
8	OTHERS	26	1.3
	NON-RESPONSE	39	2.0
TOTAL		1948	100.0

3.5 Students' Opinions of Various Subjects

The students were asked to give their opinions of the difficulty of various subjects based on the following scale.

1-----	2-----	3-----	4-----	5-----
VERY	DIFFICULT	AVERAGE	EASY	VERY
DIFFICULT				EASY

Chart 6 shows the comparison of subject difficulty mean score by race and Chart 7 shows the comparison of subject difficulty mean score by location.

The overall mean score for Bahasa Malaysia is 3.37 which is between average and easy. The students in the rural/interior areas find this subject slightly easier at a mean score of 3.38 compared to the students of the urban/sub-urban areas who have a mean score of 3.36. On the other hand, the students find English to be relatively more difficult with an overall mean score of 2.56 which is between average and difficult. In this case, the students in the urban/sub-urban areas find the subject easier with a mean score of 2.89 which is near to average compared to the rural/interior students with a mean score of 2.32 which is near to difficult. In fact 57.0% of the students in the rural/interior areas score 1 or 2, that is, very difficult or difficult compared to only 27.8% of the students in the urban/sub-urban areas.

For Modern Mathematics, the overall mean score is 2.58 which is between average and difficult. The level of difficulty is more towards average (2.79) for the students in the urban/sub-urban areas but it is more towards difficult (2.42) for the students in the rural/interior areas. 53.8% of the students in the rural/interior areas score difficult or very difficult compared to 36.5% of the students in the urban/sub-urban areas.

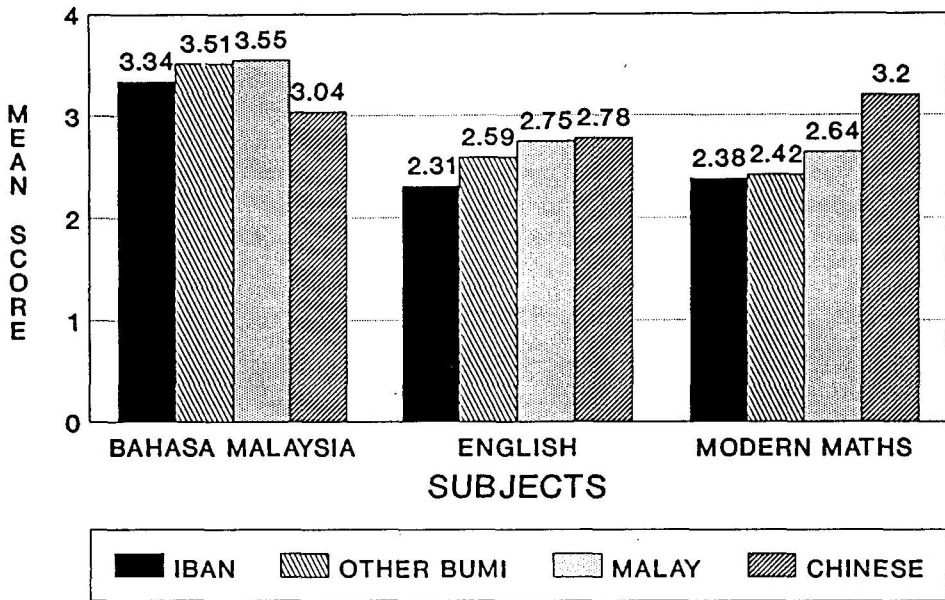
Generally, the female students find the two languages to be slightly easier compared to the male students while the male students find Modern Mathematics to be relatively easier compared to the female students.

With respect to the stream of the students, the Form Three students who are not streamed find Bahasa Malaysia easier with a mean score of 3.41, followed by the Arts students with a mean score of 3.39 and the Science students with a mean score of 3.28. However, the Form Three students find English relatively more difficult with a mean score of 1.63 which is between difficult and very difficult. The Arts students have a mean score of 2.42 but the Science students find the subject only fairly difficult with a mean score of 2.75. For Modern Mathematics, on the other hand, the Arts students find it quite difficult with a mean score of 2.20 while the Science students find this subject fairly easy with a mean score of 3.29.

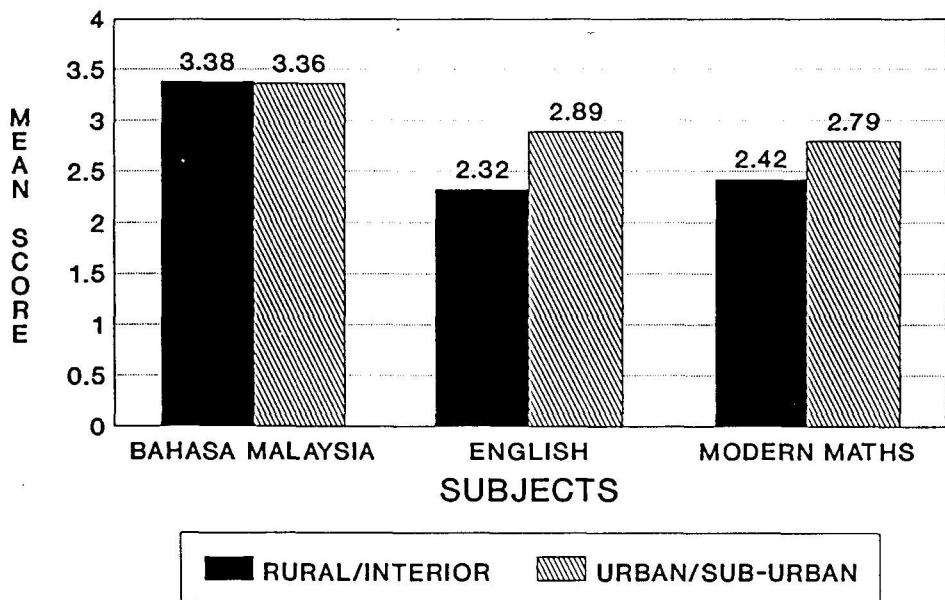
The mean score of the Chinese students for Bahasa Malaysia is the lowest at 3.04 while that of the Malay students peaks at 3.55. The Iban and other Bumiputera students score 3.34 and 3.51 respectively. However, the Chinese students score the highest for English with a mean score of 2.78, followed by the Malay students (2.75), other Bumiputera students (2.59) and the Iban students (2.31). This shows that the Chinese students find Bahasa Malaysia to be average while the other students find it relatively easier but the Chinese students find English to be easier compared with the other students.

The most interesting comparison is the level of difficulty of Modern Mathematics among the different races. The Malay, Iban and other Bumiputera students score between average and difficult with mean scores of 2.64, 2.38 and 2.35 respectively. On the other hand, the Chinese students score between average and easy with a mean score of 3.20. This shows that the Chinese students find Modern Mathematics to be quite an easy subject while the other students find it quite difficult.

**CHART 6: SUBJECT DIFFICULTY
MEAN SCORE BY RACE**



**CHART 7: SUBJECT DIFFICULTY
MEAN SCORE BY LOCATION**



Overall, the students in rural/interior schools perceived difficulty (with mean score of less than 3.00) in English, Mathematics (at all levels) and Science subjects (except Biology) more than their peers in the urban/sub-urban schools. According to Mohd. Radhi, *"if a student has found that Mathematics and/or Science is difficult and that he never seems to master it, then resentment sets in and he does not want to learn."* This will help to explain why students in rural/interior schools perform worse than the students in urban/sub-urban schools in Mathematics and Science (besides English) in public examinations. As stated in the Second Outline Perspective Plan (OPP2), *"present trends in the demand for industrial manpower indicate the need for a labour force with broad-based education emphasizing Mathematics, Science and communication abilities as well as proficiency in English as a second Language."*⁵

These attributes will provide the foundation for a trainable labour force which can adapt swiftly to the changing technological needs of the country.

Since Science and Technology play a key role in our economic building, the present situation necessitates not only remedial teaching but also some positive efforts to change the students' attitudes towards these subjects especially Mathematics which forms the backbone of all professional courses.

The teachers were asked to rate their concerns towards their students' lack of interest in their studies as well as their weaknesses in five areas viz: Mathematics, Science Subjects, oral and written English, oral and written Bahasa Malaysia. The rating is according to the five point scale shown below.

1-----	2-----	3-----	4-----	5-----
NOT	A LITTLE	MODERATELY	CONCERNED	VERY
CONCERNED	CONCERNED	CONCERNED		CONCERNED

Table 12 below shows the teachers' rating of their concern by locality. Generally, they are very concerned about these weaknesses. However, when the weaknesses between urban/sub-urban and rural/interior students are compared, it is found that teachers in the rural/interior areas are significantly (at 0.01 significance level) more concerned than the teachers in the urban/sub-urban areas regarding their students' weaknesses in Mathematics, Science subjects and English. This confirms the earlier findings that students in the rural/interior schools perceive Mathematics, Science subjects and English as more difficult than their counterparts in the urban/sub-urban school.

On the whole, the computer exposure rate for the students is very low as only 16.0% of the students have exposure to the use of computers and this includes 10.8% of the students in Form 3, 11.1% of the students in the Arts stream and 32.5% of the students in the Science stream.

With respect to locality, only around 27% of the student respondents in the urban/sub-urban schools have exposure to the use of computers compared to less than 10% of those student respondents in the rural/interior schools. This disparity in computer exposure between urban/sub-urban and the rural/interior students is not surprising as generally students in the rural/interior come from a lower income group and can ill-afford the luxury of owning computer hardware and software. Furthermore, power interruption is a common complaint in the rural/interior schools and computer installation would definitely be very low in priority compared to other facilities.

We are now in the information age where computer and telecommunication technology is one of the determinants of the economic success in any economy within this competitive global market. As such, the economic future of Malaysia in general and Sarawak in particular depends much on

⁵Government of Malaysia, The Second Outline Perspective Plan 1991-2000, Kuala Lumpur: National Printing Department, (1991) p. 170.

the skill exposure and attitudes of our future secondary school output. Therefore, it is imperative that the authorities concerned create the awareness and educate the mass especially those in the rural/interior concerning the importance and usage of Science and Technology, especially the computer and to provide the necessary facilities like computer clubs and computer lessons in each school.

3.6 Students' Attitudes

Students nowadays are said to have increasingly negative values, attitudes and principles in life. These attitudes result in low quality output especially among the Bumiputeras. For example:

At the convocation of Universiti Sains Malaysia in 1989, out of the 33 graduates who received gold medals and book prizes, only one was a Bumiputera. In addition, 21 graduates received the First Class Honours but none of them was a Bumiputera. However, 249 Bumiputera students graduated with Third Class Honours compared to only 39 non-Bumiputera students.⁶

TABLE 12

TEACHERS' CONCERN TOWARDS THEIR STUDENTS' WEAKNESSES BY LOCALITY

VARIABLE		MEAN SCORE	STANDARD DEVIATION	COEFFICIENT OF VARIATION	Z TEST STATISTIC
STUDENTS' WEAKNESS IN MATHEMATICS	URBAN/ SUB-URBAN	4.11	0.740	18.00%	Z = 4.98 SIGNIFICANT AT $\alpha = 0.01$
	RURAL/ INTERIOR	4.41	0.779	17.66%	
STUDENTS' WEAKNESS IN SCIENCE SUBJECTS	URBAN/ SUB-URBAN	3.81	0.789	20.72%	Z = 3.24 SIGNIFICANT AT $\alpha = 0.01$
	RURAL/ INTERIOR	4.06	0.810	19.95%	
STUDENTS' WEAKNESS IN ORAL AND WRITTEN ENGLISH	URBAN/ SUB-URBAN	4.09	0.770	18.83%	Z = 4.25 SIGNIFICANT AT $\alpha = 0.01$
	RURAL/ INTERIOR	4.40	0.770	17.50%	
STUDENTS' WEAKNESS IN ORAL AND WRITTEN BAHASA MALAYSIA	URBAN/ SUB-URBAN	3.78	1.170	30.95%	Z = 0.99 NOT SIGNIFICANT
	RURAL/ INTERIOR	3.67	1.190	32.43%	
STUDENTS' LACK OF INTEREST IN THEIR STUDIES	URBAN/ SUB-URBAN	4.41	0.420	9.52%	Z = 0.17 NOT SIGNIFICANT
	RURAL/ INTERIOR	4.40	0.840	19.09%	

⁶Zulkifli Yusof, *Kecemerlangan Akademik: Mengapa Pelajar Melayu Pasif dan Moyok?* Mastika, (December 1989) p. 50.

To look into the extent of this problem, the teachers in the survey were asked to give their opinion regarding the seriousness of the main problems and attitudes of the students that affect the motivation and morale of the students using the five-point scale shown below.

1	2	3	4	5
NOT SERIOUS	NOT SO SERIOUS	AVERAGE	SERIOUS	VERY SERIOUS

The mean scores given by the teachers are summarised into Tables 13 and 14 given below. Table 13 shows the mean scores of the problems which are not significantly different between the urban/sub-urban areas and the rural/interior areas. This means that the problems are common in all areas and whatever differences are due to chance variation or that the differences may in fact exist but there is no conclusive evidence from the data to support it.

One of the serious problems is that the students do not like reading but prefer to take part in activities that do not help to improve their academic performance. In addition the students are very passive and shy especially in class, have no self-confidence and are scared to give their opinions. Besides that they do not give full attention to the teacher during class, they are not interested in their studies and are too lazy to complete class exercises and homework given by the teacher.

Other problems include the decline in discipline and moral of the students like resorting to unhealthy inclinations such as truancy, smoking, having long hair, quarrelling or stealing. In addition the students tend to have negative values, attitudes and principles of life especially in their relationship with their teachers, parents and the elderly.

All these problems have mean scores of more than 3.50 showing that they are quite serious. Although the mean scores are not significantly different between localities, they are slightly higher in the rural/interior areas. This means that the problems may be slightly more serious in the rural/interior areas compared to the urban/sub-urban areas.

Table 14 shows the mean scores of the problems which are significantly different between the urban/sub-urban areas and the rural/interior areas. The significant difference at $\alpha = 0.01$ level of significance implies that there is 99% certainty that the difference is not due to chance variation.

On the whole the problem that the students are not serious in their studies due to lack of awareness of the importance and necessity of education and that the students are apathetic towards learning is quite serious according to the opinion of the teachers. However, this problem is more serious in the rural/interior areas as the mean score is 3.99 compared to the mean score of 3.82 in the urban/sub-urban areas. In addition 78.7% of the teachers in the rural/interior areas have given the score of 4 or 5 that is serious or very serious compared to 67.5% of their counterpart in the urban/sub-urban areas.

The problem that the students indulge in unhealthy activities like drug abuse, glue sniffing or gambling is quite serious in the urban/sub-urban areas where the mean score given by the teachers is 3.25 whereas the teachers in the rural/interior areas score only 2.85. In addition, 35.8% of the teachers in the urban/sub-urban areas score very serious compared to 19.9% of their counterpart in the rural/interior areas. This seems to be a prevailing problem in the urban/sub-urban areas where the students have easy access to glue sniffing.

Another problem which is quite serious on the whole is that the students tend to follow Western culture and values which are not suitable to our society. Again this problem is more serious in the urban/sub-urban areas than in the rural/interior areas as the mean scores are 3.39 and 3.17 respectively. Moreover, nearly 50% (48.9%) of the teachers in the urban/sub-urban areas score 4 or 5 that is serious or very serious compared to 41.6% of the teachers in the rural/interior areas.

TABLE 13
LOCATION BY SERIOUSNESS OF PROBLEMS THAT INFLUENCE THE
MOTIVATION AND PERFORMANCE OF THE PRESENT STUDENTS
(NOT SIGNIFICANT BETWEEN LOCATIONS)

VARIABLE		MEAN SCORE	STANDARD DEVIATION	COEFFICIENT OF VARIATION	Z TEST STATISTIC
Very passive and shy, not active in class, have no self-confidence and are scared to give their opinions.	URBAN/ SUB-URBAN	3.55	0.890	25.07%	Z = 0.72 NOT SIGNIFICANT
	RURAL/ INTERIOR	3.61	0.890	24.65%	
Do not give full attention during class.	URBAN/ SUB-URBAN	3.73	0.956	25.63%	Z = 0.12 NOT SIGNIFICANT
	RURAL/ INTERIOR	3.72	0.852	22.90%	
Not interested in their studies and too lazy to complete class exercises and homework given by the teacher.	URBAN/ SUB-URBAN	3.79	1.030	27.18%	Z = 0.87 NOT SIGNIFICANT
	RURAL/ INTERIOR	3.86	0.580	15.02%	
Do not like reading but prefer to take part in activities that do not help to raise their academic performance.	URBAN/ SUB-URBAN	3.88	0.964	24.88%	Z = 1.39 NOT SIGNIFICANT
	RURAL/ INTERIOR	4.00	0.888	22.20%	
Decline in discipline and moral like taking part in unhealthy activities such as truancy, smoking, having long hair, quarrelling, stealing, etc.	URBAN/ SUB-URBAN	3.73	1.270	34.05%	Z = 1.09 NOT SIGNIFICANT
	RURAL/ INTERIOR	3.85	0.980	25.47%	
Negative values, attitudes and principles of life especially in relationship with teacher, parents and the elderly.	URBAN/ SUB-URBAN	3.54	1.120	31.67%	Z = 0.36 NOT SIGNIFICANT
	RURAL/ INTERIOR	3.57	1.016	28.44%	

This is probably due to the fact that the urban/sub-urban students are more exposed to the Western world especially through the mass media.

The problem that the students generally possess a low level of maturity and lack critical thinking, creativity and argumentative process is fairly serious especially in the rural/interior areas where the mean score given by the teachers is 3.73. In addition, 64.3% of these teachers score 4 or 5 that is serious or very serious compared to 51.5% of their counterparts in the urban/sub-urban areas. This may be due to the lack of exposure of the rural students to the life outside their own limited social horizon so they do not have the chance to use or develop their creative abilities. Moreover, the rampant use of objective tests for the students especially in SRP examination does not encourage the students especially the less intelligent ones to think deductively following the logical sequence of steps. They can easily pick an answer without knowing the actual reason.

TABLE 14
LOCATION BY SERIOUSNESS OF PROBLEMS THAT INFLUENCE THE
MOTIVATION AND PERFORMANCE OF THE PRESENT STUDENTS
(SIGNIFICANT BETWEEN LOCATIONS)

VARIABLE		MEAN SCORE	STANDARD DEVIATION	COEFFICIENT OF VARIATION	Z TEST STATISTIC
Not serious in their studies due to lack of awareness of the importance and necessity of education; apathetic towards learning	URBAN/ SUB-URBAN	3.82	0.980	25.65%	Z = 1.98 SIGNIFICANT AT $\alpha = 0.05$
	RURAL/ INTERIOR	3.99	0.840	21.05%	
Taking part in unhealthy activities like drug abuse, glue sniffing, gambling, etc.	URBAN/ SUB-URBAN	3.25	1.615	49.77%	Z = 19.32 SIGNIFICANT AT $\alpha = 0.01$
	RURAL/ INTERIOR	2.85	1.425	50.05%	
Following the Western culture and values which are not suitable	URBAN/ SUB-URBAN	3.39	1.120	33.08%	Z = 19.32 SIGNIFICANT AT $\alpha = 0.01$
	RURAL/ INTERIOR	3.17	0.997	31.43%	
Low level of maturity; do not possess critical thinking; not creative and unable to argue well.	URBAN/ SUB-URBAN	3.49	0.918	26.31%	Z = 2.85 SIGNIFICANT AT $\alpha = 0.01$
	RURAL/ INTERIOR	3.73	0.878	23.54%	
Poor leadership qualities.	URBAN/ SUB-URBAN	3.21	0.858	26.76%	Z = 3.12 SIGNIFICANT AT $\alpha = 0.01$
	RURAL/ INTERIOR	3.46	0.918	26.54%	

Thus, it is not surprising that the students also have poor leadership qualities and that this problem is again more serious in the rural/interior areas. 47.0% of the teachers score serious or very serious compared to 34.3% of the teachers in the urban/sub-urban areas. As such, the students tend to follow the advice and teachings of the parents and teachers. This is consistent with the response where 89% of students in the rural/interior areas tend to follow their teachers' advice most of the time or all the time compared to 80.1% of their counterpart in the urban/sub-urban areas. In addition, 94% of the students in the rural/interior areas follow their parents' teachings and advice most of the time or all the time compared to 89.0% of the students in the urban/sub-urban areas. Hence, parents and teachers should advise the students and help them to overcome the problems mentioned so that they become more motivated and can perform better in their studies.

Parents and teachers play an important role in education today as they are responsible for educating and guiding their children/students. They should work together as partners: teachers are the educators at school while parents are the educators or teachers at home. In fact, parents are the first teachers and the most influential persons in a child's life. As such, they should supplement and complement the role of the school because children nowadays succumb easily to social vices.

Teaching is a noble and important profession as teachers lay the foundation for the creation of doctors, lawyers, engineers, accountants, architects and even politicians. Teachers nurture and develop the students of yesteryear to become the greatest minds of the world today and they will continue to prepare the present students for tomorrow. They are the ones who play an active role in imparting knowledge, and help build useful skills to develop the most important asset of our country - human resource. In addition, they are character-builders who can play an involving role in instilling good ethical values, discipline and a sense of pride towards the nation.

4. CONCLUDING REMARKS

The educational level of the labour force of Sarawak is deplorably low especially among the indigenous groups and this is further aggravated by the high rate of rural illiteracy. The survey has unearthed a gaping chasm between the rural students' aspirations and Vision 2020. The former aim for professions which are not technical or skill based although the jobs of tomorrow require high-level technical skills, management and entrepreneurial capabilities.

Education and training are the panacea for the problems which may hinder the fulfilment of Vision 2020. The students of today will be the workforce of tomorrow and to do the jobs of tomorrow which require skills and technology, they need to be encouraged to do well in Mathematics, Science and English at school level although they perceive difficulty in these subjects. In addition, parents and teachers should work together as partners to change the negative attitudes of the younger generation so that our future workforce will have good ethical values, discipline and a sense of pride towards the nation.

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QUESTIONS AND ANSWERS

Question: I'd like to congratulate Dr. Ibrahim for writing a good paper which is very pertinent to our present situation. In our National Education Training we normally use figures. We may want to have say, 2000 engineers or 2000 architects by the year 2000. So we have to build schools or institutions to cater to this number of students. However, we never consider the human element of the input like students' interest and society's acceptance of the jobs and so on. In your paper you have produced evidence that students' interest and the reluctance of parents to send their children to trade schools are factors that need to be considered by the higher authority. So my question is: are you going to forward your results to the Ministry of Education or the government to consider these human elements. My second question is what steps should be taken to change the attitudes or the interest of the students so that they would be more Science and Technology oriented.

Answer: Yes, we will be submitting the findings to the Ministry of Education hopefully by the middle of this year. We are also going to suggest some services that can be implemented by them.

Your second question is quite difficult to answer - how to create the atmosphere and how to increase the interest of students towards subjects like Mathematics and Science. I think it is the role of every citizen in the society, not only of the teachers, but also of the parents in society as a whole. When we say that Science is important we must make it true and show our respect for it. Parents take easy steps and students too. They want to take their SPM exams but they know that their chances of doing well mean not taking Mathematics but subjects like Bahasa Malaysia, Agama Islam and Sastera Melayu. Students applying to ITM have very good aggregates and grade 1, but without Mathematics or English. So, in the end we have to reject their application for Diploma courses. Parents also have to inculcate the importance of Science and Mathematics in their children. They should also exert more control in their children's lives and regulate their time especially in watching TV.

Comment: Your paper has given a very good insight to the kind of attitude and educational facilities that we have in Sarawak. If you can, in your concluding remark tell us how to go about improving the situation so that the recommendations would be implemented. You are in the best position to recommend in the light of the research that you have carried out.

Reply: In fact if you glance through my paper again, it does mention other organisations, agencies, etc. that could help. What I did was to touch on the various alternatives that have not been touched by other people. However, as I've said earlier, the papers are still not completed but hopefully by June, our committee would sit down again and we will use the resolutions from this seminar for our recommendations.