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CHILDREN - OUR HERITAGE

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Let us for a moment imagine a nation without children. We do not need much intelligence to predict that such a nation is a dying nation. If you were to visit a village or town where the young men and women have left home and whose occupants are principally the aged parents, you will inevitably detect an air of hopelessness and even doom. It is the presence of children¹ and youth that gives vitality and a sense of continuation and future to a village, a town or a nation. At the National Seminar on Vision 2020 held on 5-7 December which was attended by senior executives of the public and private sectors, academia and prominent personalities, development of human resources surfaced repeatedly as an essentiality to Malaysia becoming a fully developed and industrialised country by the year 2020. The Prime Minister himself acknowledges its importance because all the nine strategic challenges, which he identifies as those confronting our nation in its pursuit to attain this vision, are directly or indirectly concerned with human resource development. A comparison of the economic health of the resource-poor nations of Japan, Taiwan and Singapore with the resource-rich nations of Australia, Canada and New Zealand bears further testimony of the significance of human development.

1. Children refers to those who are 18 and below. This is also the UN and UNICEF's definition.

Aside from the importance of children to the continuity and progress of a nation, children are an integral part of the family and the reason for its existence. Until very recently, the most common structure of the human family is the lifelong commitment between man and woman and their feeding, sheltering and nurturing their offsprings until they reach maturity. This structure is unique to the human race. Some animals live in social groups and give birth to offsprings which are protected by adult members but none of them (not even apes and monkeys which are considered to be the advanced species in the animal kingdom) organise themselves into family units and have both parents invest in the rearing of the offsprings. According to Winch (1971), procreation to replace the dying members of the society and socialisation to train the young to become competent and participating members of society are two of the five basic functions of the family as a unit of society.

Children serve society by being the vehicle for its perpetuation while society and its unit, the family, provide the means for the satisfaction of the child's basic needs - the need to be fed, to be protected, to belong, to be loved and accepted. In fact, another of the five basic functions of the family is the provision for emotional support to bind individuals together, to harmonise their goals with those of the other members of society, to deal with emotional crises and to foster in each individual a sense of commitment, direction and purpose. The need to know one's root attests further to man's need to belong and to the importance of heritage. Orphans and adopted children's desire to seek for their natural parentage, especially during the adolescent years, is not so much a rejection of their foster or adopted parents but is the expression of the innate desire to know their roots.

The continuance of lineage is of paramount importance to many communities. Some families may even look upon the begetting of offsprings for perpetuating their lineage to be a primary concern of their lives, even to the extent of committing infanticide or putting away their infertile or girls-producing wives in patrilineal families. Though crucial to the advancement of a nation and indispensable to its perpetuation, children should be not be cared and nurtured for the sake of the nation or family only. More importantly, development should primarily be for the child's sake for man is the climax of God's creation, being the only living thing on earth to have a conscience, intellect and speech. Chimpanzees, one of the most advanced animal species, cannot speak and are able to recognize only a few words even after years of personal coaching. On the other hand, a three-year-old child can acquire a fairly extensive vocabulary and a good grasp of the language through exposure to the language and without any purposive teaching. Furthermore, the young child can verbalise his thoughts and intentions. Soon he can learn to reason and solve problems. Concordant with his physical and cognitive growth are his social, emotional and spiritual development.

Biological Heritage

The potentials for a new being reside in the ovum (or egg) and sperm and a new life begins when the sperm penetrates the mature ovum and their nuclei join together. But, what the organism inherits from his father and mother - the genotype - is not necessarily manifested in the child. What is observable and/or measureable in the individual (that is, the phenotype) is determined by many factors. One of the most important of these factors is the environment. Although the genotype sets the limits within which the individual's abilities (the

potentials) can vary but, whether the potentials will be realised depend upon environmental circumstances and the ways the person responds to them. Even in the mother's uterus which is a relatively stable and sheltered environment, the developing baby is not completely protected. Apart from the mother's nutritional and health status which we all know affect the foetus' nutrition and ability to attain his optimal growth, pollution, substance abuse and diseases have emerged as threats to the foetus' survival and development. Concern for children and the future generations brought nations together in 1989 to discuss the Convention on the Rights of the Child which resulted in its adoption by the United Nations General Assembly. The Convention "recognizes that every child has the inherent right to life" and States have "to ensure the maximum extent possible the survival and development of the child". The culmination of this recognition was the World Summit for Children on 30 September 1990.

Threats to Children's Survival and Development

A. Physical Environment

For plants to thrive, a suitable habitat is needed. Similarly, children need a safe and healthy environment to survive and develop. The prenatal period is the most critical stage in human development because the organism is most sensitive to environmental influences at this period. Alcohol, nicotine (cigarette), aspirin, tranquiliser, heroin, caffeine, radiation, diseases (such as Rubella and syphilis), toxic substances and nutrition can affect the foetus' development. The effects range from low birth weight, prematurity, hyperactivity to congenital heart defects, deformity, mental retardation, spontaneous abortion and stillbirth.

Since it is impossible to discuss the entire range of the physical environment which affects the realisation of a child's potentials, only air pollution and environmental degradation will be briefly examined in the lecture. This is because these two challenges to children's development involve the whole community or even the nation while the others are within the control of parents.

(i) *Air Pollution*

Air pollutants hit young children more harshly than adults. Owing to their smaller body mass, children inhale more air per unit of body weight than do adults. Hence, the amount of pollutants inhaled by young children is about twice that of adults. Their young, growing bodies also make them far more vulnerable to the poisons in the air than adults. The link between air pollution and incidences of respiratory and pulmonary diseases is demonstrated by studies such as those of Dassen et al. (1986) and Goren & Hellmann (1988). According to the UNICEF-UNEP's report (1990), 4.2 million children under the age of five died from respiratory infections caused by fuel.

Children in urban areas and near industrial sites are exposed to air pollutants. The haze which was only lifted by the recent downpour of rain makes the people and government conscious of the quantities of pollutants discharged by fuels, particularly by exhaust fumes from vehicles. The outcome is the encouragement given to the public by the government to use lead-free gasoline and the eventual phasing out of the leaded one. Few Malaysians are cognizant that effects such as seizures, irritability, lack of coordination, clumsiness, behavioural changes and mental retardation occur when the blood lead concentration is in the range of 400-500 microgrammes/litre (WHO, 1977, 1980). Some people are even less tolerant of lead poisoning and the effects are

manifested when the concentration is below 400 microgrammes/litre. Studies commissioned by the United Nations Environment Programme reveal that few cities have blood lead concentration below the safe level of 100 microgrammes/litre. Cities in developing countries, such as Mexico (230 microgrammes/l) and Bangkok (340 microgrammes/l), have levels of blood lead concentration much higher than the safe level. More recently, hyperactivity and lowering in IQ are suspected to be related to blood lead concentration (UNICEF-UNEP, 1990).

Direct inhaling is not the only source of lead intake. Food is another source. Food sold in the open air along roads has been found to contain high levels of lead. A study of FAO in Indonesia found food sold by street vendors to contain lead; the highest was *nasi lemak* which had lead content of 0.46 ppm.

Besides polluting the air with lead compounds, exhaust fumes from vehicles also pollute it with carbon monoxide which can reduce foetal weight, cause brain damage or even death. This is because the haemoglobin in the human blood has a much greater affinity for carbon monoxide than for oxygen (about 200 times), thus reducing the blood's ability to transport oxygen to the body tissues and depriving them of oxygen.

(ii) *Environmental Degradation*

Although sustainability of the environment is currently a highly emotive and political issue, nonetheless, it has to be examined. Many concerned adults feel that the new technology which is to make life safer, healthier and easier is, in reality, doing the opposite. This highly technological-dependent generation has altered the ecosystem so radically that what this generation will bequeath to its offsprings is a planet very different from the one which our forefathers have left us, unless immediate actions are taken to protect the earth.

Global warming, ozone depletion, loss of genetic resources, desertification and general land degradation are intimately linked to one another. For instance, gases (such as carbon dioxide, methane, nitrous oxide and chlorofluorocarbon) known as greenhouse gases, are expected to cause a significant warming of the global climate in the next century (ICSU/UNEP/ WMO, 1986). The temperature increase would result in global rising of the sea-level which will lead to increased flooding in low-lying areas which are usually densely populated. Some of the consequences are damage to crops, homes, buildings and land, and increased loss of life, thus aggravating further the poverty of impoverished people.

Rapid and indiscriminate deforestation, in addition to destroying top soil, fauna and flora, will produce desertification and general land degradation. Climatic changes are to be expected. The depletion of ozone in the upper atmosphere (stratosphere) reduces the protective layer of the stratospheric ozone, thus permitting more ultraviolet radiation to reach the earth's surface. This will result in greater risks of skin cancer and cataracts and a possible lowering of the human immune system. Additional radiation will also affect the health of animals and the yield of crops.

Food shortage or famine creates havoc to children's development. Malnutrition does not only produce severe physical under-development but also makes the child more prone to infection which, in turn, exacerbates malnutrition. Studies (Brockman & Ricciuti, 1971; Freeman et al., 1977; Hertzog et al., 1972; Monckeberg et al., 1972; Richardson, Birch & Hertzog, 1973) have also shown mental deficit in malnourished children. Furthermore, undernourished children have little energy which handicaps them in school performance. Poor school achievement leaves these children with a sense of failure which imbues in them feelings of worthlessness or low self-esteem and leaves them without a need to

strive. These children are not only in poor physical conditions but are mentally, socially and emotionally maimed.

Malnutrition in Malaysia, especially Peninsular Malaysia, is neither severe nor extensive. Compared to other countries in Asia, the nutritional status of Malaysian children, on the whole, is good. However, we cannot afford to be complacent and take comfort in the knowledge that Malaysia is a country of plenty. With rapid development, exploitation of natural resources, indiscriminate deforestation and loss of genetic resources, coupled with unpredictable climatic changes and unforeseeable natural disasters, we can come to a time when our children are hungry or are dying from poisoned air or water or from both or are irradiated by atmospheric ultraviolet radiation. Let us not allow greed, get-rich-quick schemes, materialism and selfishness to deprive this and future generations of a healthy environment to grow up in. Let us protect Malaysia and the earth so that our children, our children's children - our heritage - can survive and develop.

B. Psychological Environment

A psychologically safe and stimulating environment is as important to a child's development as a physically safe and healthy one. Various studies suggest that marital discord is associated with the development of aggressive and antisocial behaviour, delinquency, alienation and other types of disturbances in children (Chandrasegaran, 1983; Chiam, 1982; Block et al., 1981; Lobitz & Johnson, 1975; McCord, 1979; McCord, McCord & Howard, 1961; Rutter, 1979; Sampoorna, 1988). According to Rutter (1979), the antisocial behaviour in children in non-intact families is not linked with the breakdown in the family but with the discord and disharmony that lead to the break.

Being fed with mental food is similar to being fed with physical food. Just as a child without stimulation can be likened to a malnourished one, a child who is charged to digest large quantities of information is in a condition similar to one who is overfed. Thus, while excessive physical food conduces obesity and possibly premature death, excessive mental food results in mental overload, stress and psychological disorder.

(i) *Non-stimulating Environment*

The findings of the Malaysian Child Development Study (Chiam, 1991; Figure 1 to 7 in Appendix A) reveal that urban advantaged children are consistently the most advanced in physical, cognitive (intellectual), language and socioemotional development while estate children are consistently the least. Urban disadvantaged and rural children who differ little in their development are in the intermediate positions. These sectorial differences, especially the differences between urban advantaged and estate children, are significant. However, no consistent trends in ethnic differences can be discerned. For instance, among the five-years-olds in the urban disadvantaged sector, the Chinese are obviously the best in problem solving while the Indians are the least but, in language development, the Indians are significantly better than their Malay and Chinese agemates (Table 1 and 2). The three races in the urban advantaged sector do not differ significantly in physical, cognitive, language and socioemotional development. The data of this study suggest that, with favourable socioeconomic and environmental conditions, children, irrespective of ethnicity, are able to achieve better growth and development. Thus, from these findings, it can be concluded that environment determines the extent to which children's potentials develop.

Table 1

Problem Solving by Sector, Age and Race (Means)

Age Yrs		UA	Sig.	UD	Sig.	RU-ES	Sig.
3	Malay	.21	ns	.10	ns	.15	ns
	Chinese	.26		.18		.16	
	Indian	.15		.05		.07	
4	Malay	.80	ns	.52	ns	.38	sig.
	Chinese	.56		.52		.63	
	Indian	.82		.22		.17	
5	Malay	1.30	ns	.95	sig.	.93	sig.
	Chinese	1.11		1.31		.88	
	Indian	.90		.84		.23	
6	Malay	1.70	ns	1.60	ns	1.16	sig.
	Chinese	1.74		1.35		1.05	
	Indian	1.54		1.03		.29	

Maximum score = 3

Table 2

Language Development by Sector, Age
and Race (Means)

Age Yrs		UA	Sig	UD	Sig	RU-ES	Sig
3	Malay	21.85	ns	18.05	ns	19.61	sig
	Chinese	21.10		18.73		17.78	
	Indian	20.98		19.18		16.92	
4	Malay	25.32	ns	21.11	ns	22.93	sig
	Chinese	24.27		22.07		21.46	
	Indian	26.02		23.24		20.03	
5	Malay	29.00	ns	25.84	sig	26.17	sig
	Chinese	27.37		26.65		23.76	
	Indian	27.25		28.59		23.24	
6	Malay	29.93	ns	28.47	ns	28.15	sig
	Chinese	29.78		28.70		25.79	
	Indian	31.56		29.93		26.48	

Maximum score = 59

Table 3
Distribution of Fathers' Educational Level
by Sector (In Percentage)

Educational Level	UA N = 578	UD 671	RU 1110	ES 365
Did not go to school	0.0	3.7	4.1	14.0
Primary school	0.0	45.9	58.6	56.2
Form III	1.0	31.0	21.9	27.4
Form V	20.8	19.1	14.3	2.5
College	23.7	0.0	0.0	0.0
University	54.5	0.0	0.0	0.0
Religious school	0.0	0.3	1.1	0.0

Table 4
Distribution of Mothers' Educational Level
by Sector (In Percentage)

Educational Level	UA N = 580	UD 681	RU 1113	ES 365
Did not go to school	0.0	7.2	12.4	23.3
Primary school	1.6	55.2	57.5	67.1
Form 3	6.6	25.1	16.6	8.5
Form 5	32.9	12.0	11.0	1.1
College	31.4	0.4	0.4	0.0
University	27.4	0.0	0.0	0.0
Religious school	0.4	0.0	2.1	0.0

Table 5**Distribution of Fathers' by Occupational Level and Sector (In Percentage)**

Occupational Class	UA N = 587	UD N=677	RU N=1110	ES N=362
Class I	44.5	0.0	0.0	0.0
Class II	34.9	0.0	0.0	0.0
Class III	20.6	29.5	30.2	13.0
Class IV	0.0	68.5	68.1	86.5
Class V	0.0	1.9	1.7	0.6

Table 6**Distribution of Mothers' Occupational Level by Sector (In Percentage)**

Occupational Class	UA N=715	UD N=723	RU N=1226	ES N=383
Class I	10.3	0.0	0.0	0.0
Class II	15.8	0.0	0.0	0.0
Class III	20.7	11.9	10.2	2.6
Class IV	0.3	15.1	12.9	66.1
Class V	0.0	1.0	0.4	0.5
Class VI*	46.6	72.1	76.5	30.8

* denotes full-time homemakers

Table 7

Correlations Among Educational and Occupational Status of Parents and Children's Cognitive, Language and Socioemotional Development

	Father		Mother	
	Educ	Occup	Educ	Occup
Cognitive	.13**	-.10**	.12**	-.02
Language	.21**	-.09**	.09**	-.11*
Social	.18**	-.17**	.19**	-.08**
Basic Emotions	.22**	-.21**	.20**	-.11**

* $p < .01$

** $p < .001$

An examination of the educational and occupational levels of the parents (as displayed in Tables 3 to 6) shows parents of the advantaged children are better educated as well as having higher social and financial status than the other three groups. Estate parents, on the other hand, have the least education and the lowest occupational status while there are hardly any differences between urban disadvantaged and rural parents. A comparison of these data with those of the children's development suggest a link between educational and occupational status of parents and status of children's develop-

ment. However, correlational analysis (presented in Table 7) indicates that the correlations between parent's educational and occupational status and child's development are not high. The correlation between father's education and child's language development, for instance, is only 0.21. This means that father's education explains only 4.4% of the variance in child's language development. The contribution of mother's education is even lower than that of the father, and parental occupation has even lower correlations. Therefore, while education* can be a contributory factor to the provision of a stimulating environment, it does not necessarily follow that children of well-educated parents are brought up in culturally enriched environments. In fact, Yeates et al. (1983) found no relationship between maternal education and child's IQ.

Provision of play and educational materials is important to child's intellectual development but it is not the only essential variable. Bradley and Caldwell (1976) found that, besides provision of appropriate play materials which has a correlation of .56 to the infants' mental performance, emotional and verbal responsivity of mother and maternal involvement with child are equally important; their correlations are .50 and .55 respectively. In fact, numerous studies (Crockenberg, 1983; Plomin & DeFries, 1983) have indicated that responsivity and sensitivity to the child's needs, especially in the first two years of life, facilitate level of competence and cognitive learning. Thus, parent-child interaction is of paramount importance. In fact, Tizard & Hodges (1978) found that children's socioemotional adjustment was impaired and they displayed inability to concentrate although the institution had a good caregiver-child ratio and a rich selection of books. This was due to the high staff turnover. In their

study, Tizard & Ress (1974) concluded that "All the evidence from this and other studies suggests that children who are not often talked to or read to and are not given a variety of stimulation tend to be retarded, whatever the social setting; institutional retardation, when it occurs, environmentally produced retardation" (p.98). Thomas (1991) found that it is not so much educational materials and workbooks that foster language development of preschool children but conversation with the mother. Similarly, Forder, Bever & Garrett (1974) contended that the opportunity to engage in conversation with adults facilitated language acquisition.

Parents and significant others are the child's most significant environmental influences. Parson et al. (1982) found children's achievement beliefs and attitudes to be influenced more by their parents' attitudes about their abilities than by their own past performance. Father's influence, especially on boys, appears to be grossly underestimated. Father-absence is found to be linked to boys' intellectual functioning (Biller, 1970; Lessing et al., 1970) and underachievement (Blanchard & Biller, 1971). Father absence also disrupts sex typing in young boys (Drake & McDougal, 1977; Huston, 1983), being most apparent during preadolescence and most severe if the separation occurs before the age of five (Hetherington, 1966). Dominant mothers and weak fathers are most destructive to boys' sex-role identification, resulting in feminine characteristics. On the other hand, femininity in daughters is related to father's masculinity but unrelated to mother's femininity (Hetherington, 1965). Studies in Malaysia indicate the salience of father in the child's development: drug addiction (Chandrasegaran, 1983) and disciplinary problems in school (Sampoorna, 1988) are related to father absence, poor father model and troubled father-son relationship. It is noteworthy that, at adolescence, fathers and mothers still exert the most influence on decisions on significant issues (Chiam, 1987)

(ii) *Over-stimulating Environment*

While children in disadvantaged communities suffer from physical and mental malnutrition, children from advantaged homes are victims of physical and mental obesity. Psychological deaths arising from the pressure to assimilate masses of information which are often indigestible are increasing by leaps and bounds in Malaysia in the last two years and are more rampant than we realise. The inability of young children to express their psychological fears, feelings of worthlessness, lack of self-confidence and frustrations does not mean that children are incapable of having these feelings. Undoubtedly, adults experience anger, resentment and boredom if they were forced to sit for hours to learn nonsensical words. Similar feelings are felt by children when, at two years of age, they are coerced to learn, what to them, are nonsensical words and at four are drilled to memorise Latin names of animals and plants in attempts to transform them into geniuses. Some parents feel that instilling knowledge into a child at birth is already too late and, thus, the child is taught while the child is still a foetus.

Programmes which their developers claim can produce magical results in the child's intelligence abound. Books and programmes purported to metamorphose every child into an intellectual giant are lapped up by parents with neurotic ambition. As the demands for early and miraculous intellectual development escalate the market becomes ludicrous. As a result, suppliers battle to outdo each other to capture the market by making outrageous claims and without feeling a tinge of guilt at the irreversible consequences. It is highly foreseeable that someone, in the near future, would claim having discovered a programme which can sensitise the child towards learning while being conceived. Pills to improve memory are now available and soon we will be able to buy pills purported to create geniuses.

This possibility may not be so far-fetched. When 24 prematurely senile patients at the Albany Medical Centre were injected with "Cylert" whose chemical name is magnesium pemoline and which increases RNA production, at least 17 of them showed improvement (Asimov, 1972). The discovery that learning is related to RNA production may lead to a more bizarre method of acquiring instant knowledge. James V. McConnell at the University of Michigan taught planaria (flatworms) to respond to light and when these worms had acquired this ability, they were chopped up and fed to untrained worms. The worms which ate the trained flatworms learned to respond to the light in a much shorter time than those which did not. Using rats and hamsters to duplicate McConnell's study, Allan L. Jacobson at the University of California obtained similar results. In other words, Jacobson also found that when rats and hamsters were injected with RNA from the brain of trained rats and hamsters, they too took less time to learn to respond to the light. Extrapolating these findings to human beings, it could imply that students and others can be experts in any field by receiving injections of RNA from the brains of experts.

The number of parents who want their children to be geniuses or at least be intellectually superior is frightfully high. The fad of hoarding children seems to have reached such fetishistic heights that parents are prepared to engage in all sorts of activities such as crawling on all fours with their children for at least a mile a day in attempts to enlarge their children's brain capacity. They were informed that the more the child is physically and mentally exercised the bigger the brain and hence, the more intelligent the child. Based on this premise and on the desire to equip the child with a multitude of skills and knowledge, parents send their children, even as young as two years old for tuition in every conceivable subject - music, fine arts, tennis, swimming, ballet,

computer programming, speech and drama besides the academic subjects. The child is also expected to perform with distinction in all areas. Every minute of the child's time must be gainfully employed.

Can children sustain themselves physically and emotionally in such a stimulated environment? Even if they can, I wonder what will their reflections of their childhood at their old age be like? Will they recall their childhood with idyllic joy or with shudder? More importantly what is the psychological makeup of such children? According to David Elkind, a well-known psychologist, "Today parents want superkids, but what they are often getting are super problems (1987, p. 61).

Hyperactivity, aggression, violence, school phobia, restlessness, inability to concentrate, insomnia, psychosomatic illness are among the common problems of children whose parents demand high performance. Allow me to cite a few cases to demonstrate the problems of hurried children.

Case 1 A fourteen-year-old, an ASEAN Scholar, was expelled from a Junior College in Singapore after a series of violent acts which included breaking his hostel bed and beating up his classmates. He had been an obedient son, often ceding to parents' wishes in preference to his own. He was chauffeured by his mother who saw to all his needs to ensure that he had as much time as possible for his studies.

Case 2 A few weeks before the From Five Examination, a seventeen-year-old boy refused to study. When reprimanded by his mother, screamingly he informed her that he never knew a single happy moment since the age of four. He ran away and refused to come home. The distraught mother repeatedly said, "I cannot understand how my loving son can become a monster overnight. Of all the children, he is the most loving."

Case 3 A Form II boy, on being scolded by his father, told his father he hated him. Then he chopped up his pet rabbit and hamsters and ran to stay with his godparents whom he felt understood him better.

Case 4 A Form Four girl who had a wild party in her house when her parents were away said "I have everything except my parents' love".

Case 5 A teenaged girl who was caught prostituting claimed "I did for the man I love. He is the only one who ever showed me kindness".

Case 6 This Standard Four girl was among the top students in one of the control schools. She was evaluated by her teachers to be responsible and mature, and was a class monitor. One day she told her class teacher that she did not want to be the class monitor anymore. First, she showed signs of distress whenever she was getting ready for school, then she demonstrated reluctance and finally refused outright to go to school. Bribery and threats were of no avail.

Case 7 This child was happy in his kindergarten but manifested school phobia after a few months in Standard One.

Cases of children who are unable to concentrate, tend to daydream, are extremely restless, or destructive or emotional are numerous. The principal reason for these problems is the pressure to excel, not in only one area but in several.

It is not wrong to want children to do their best. It is wrong when parents push them so hard that they are physically and psychologically abused and injured. Many parents are consciously or unconsciously perceiving their children's success as their own success. When a

two-year-old succeeds in recognising the word which the parent has been flashing before her for days, it is not the child but the parent who is filled with elation at the success. More often than not, it is the parents who want the child's IQ to be tested and are the ones who are anxious to know the score. The child's high IQ score and/or scintillating performance, undoubtedly, gives parents the thrill and the great satisfaction of having provided their children with a good heritage. But what good does this heritage do to the child if, in the adult years, he feels psychologically insecure, is unable to relate to others and unable to work cooperatively with others or cannot function productively. What is the point of having a head filled with knowledge if he is filled with anger and resentment towards himself, his parents and the world? Let us hope that the children will not come to the same end as Humpty-Dumpty, whom most of you can probably recall, had a big head but a fragile body. When Humpty-dumpty fell from the wall, nothing in the world, not even all the king's men, could put him together again.

Strategies Against Loss of Genetic Resources

To preserve our heritage, care has to be exercised to ensure that none of the genetic resources are lost through impairment or ruin. To attain this end, several short- and long-term steps have to be taken by parents, the community and the nation.

A. Parents

i) *A Time for Everything*

It is very natural that parents want their children to be a credit to them so that at their old age they can look at their heritage with pride and not with despair.

However, being in a hurry and in keeping with the present trend, many parents in the high and middle socioeconomic class are shelling their children with numerous activities and propelling them to chase after the much sought character, "intelligence". If only parents would pause a moment and examine the creator's master plan for children's development they would have less hassle and their children would have a more pleasurable time growing up.

Every man and woman go through the same sequences of developmental stages as he/she develops from the zygote (the fertilised egg) to old age. These stages are invariant, that is, everyone goes through the same sequence of stages, with each succeeding stage being more advanced than the preceding one. This implies that each stage has its unique characteristics or skills which the organism has to master before proceeding successfully to the next stage. The quality of the attainment of each stage, therefore, depends on the quality of the development of the stage before it. If parents or caregivers follow the master plan that has already been laid down in the child, the skills, be they physical, intellectual, social or emotional, will be acquired at their most sensitive period, resulting in not only the facilitation of attainment of these skills and their optimal development but also in laying down a good foundation for the next stage of development. But parents with neurotic ambitions for their children ignore the master plan. Children below two years are bombarded with flash cards in attempts to teach them to read when, neurologically and mentally, they are not ready: their vocal chords are structurally incapable of producing sounds and mental representations are not available to children below two.

At the first stage of intellectual development, the sensory-motor stage, children's cognitive structure is formed through experiences acquired through their senses and

motor activities. This is demonstrated by the infants' interests in their surroundings, the tendency to place things into their mouths, persistent dropping of things to test the object's permanence and, later on, the insistence to crawl and to walk. The exploration of the environment and contact with reality are essential to the attainment of the skills at the next stage - speech and representational thoughts - which is evinced by the child's ceaseless chatter and endless questions as well as self-talk. Even the constant "no" at the terrible two's stage is nature's way of enabling the child to establish his existence and identity.

The child's readiness and ability are indicated by the interest shown. If parents and caregivers cooperate or take advantage of the master plan then development can occur at the sensitive or critical period which is the best time for acquiring that particular skill. Critical periods are not universal; they differ for different skills and for different individuals.

King Solomon, reputed to be the wisest man in the world, said:

There is a time for everything, and a season for every activity under heaven:

a time to be born and a time to die,

a time to plant and a time to uproot,

a time to kill and a time to heal,

a time to tear down and a time to build

a time to weep and a time to laugh...

ii) *Discipline*

Proverbs, the sayings of King Solomon, are for attaining wisdom and discipline (Proverbs 1:2). Consequently, he had quite a few of them on discipline. The following proverbs succinctly sum up the importance of disciplining children:

He will die from lack of discipline,
led astray by his own folly (Proverbs 5:23)

Many children do not die physically from lack of discipline although some do, for instance, drug addicts through their inability to say "no" to drugs and AIDS victims through their inability to curb their unhealthy desires. Weak or lack of self-discipline have prevented many from reaching the heights of success and, in several cases, have led to self-destruction (such as through drug addiction and AIDS). Excellent grades in examinations are seldom achieved without sacrifice, diligence and discipline. Inability to delay immediate gratification for long term goals has ruined many youths and even adults. Thus, "he who ignores discipline comes to poverty and shame" (Proverbs 13:18). Consequently,

Discipline your son, for in that there is hope;
do not be a willing part to his death. (Proverbs 19:18)

and when you

Discipline your son and he will give you peace;
he will bring delight to your soul. (Proverbs 29:17)

Discipling children is hard work because it requires patience, time and energy. King Solomon was not wrong when he wrote "he who loves him is careful to discipline him (Proverb 13: 24). Contrary to popular belief, children prefer discipline for it gives them a sense of security as well as self-esteem because knowing what is expected of them gives a greater chance of emitting acceptable behaviour.

(iii) *Time for Children*

The link between child's mental ability and parenting variables, such as maternal emotional and verbal responsiveness, and maternal responsiveness to infant's needs (Crockenberg, 1983; Elardo, Bradley & Caldwell, 1977), demonstrates the importance of parent-child interaction. The impairment to development when infants fail to establish secure attachment to caregivers further attests to the need for interaction. This need is reinforced by findings that suggest that failure to thrive and deprivation dwarfism arise from lack of maternal attention and affection (Gardner, 1972). Furthermore, for any relationship to develop and flourish, time with one another is essential.

According to Dorothy Rogers (1981), in spite of the changing patterns in the American family, youths are still strongly influenced by their parents. To the majority of Malaysian adolescents, parents are still their most significant others (Chiam, 1987). The quality of the parent-adolescent relationship is probably the most important single determinant of adolescent attitudes and behaviour (Larson, 1972). This quality cannot be built overnight. Furthermore, the attachment bond has to be formed early because the first two years are the critical years for its establishment and the quality of the attachment is predictive of a number of the child's cognitive and socioemotional characteristics in later years (Matas, Arend & Sroufe, 1978; Sroufe, Fox & Pancake, 1983). These characteristics include flexibility and persistence in problem solving, social competence, self-esteem and empathy.

If parents do not form firm relationships and have rapport with their children, then peers will move into the vacuum. It is not so much that the peer group has won in the competition but it is more that parents have abdicated their authority and influence (Young, 1973).

To imprint their influence, parents have to make time for their children and this responsibility cannot be delegated to anyone.

B. Community

In every community, there are families who neglect their children or who are unable or do not have the means to nurture their children. These are high risk families for the probability of the children's potentials being untapped and their lives being wasted away is high. Consequently, it is important to identify the high risk children so that our genetic resources can be recovered, protected and developed. Poverty is one of the greatest barriers to optimal development. The data of the Malaysian Child Development Study and numerous other research indicate that deprived children are under-achieving. Appendix B7 shows that 63.7% of the six-year-olds in the urban advantaged sector have mastered reasoning skills but only 17.1% of the estate six-year-olds have attained this mastery. Our data also disclose that, for the higher order cognitive skills, the gap between the urban advantaged and estate children widens with age (Appendix B6 and B8). When these preschool children go to school they will fall further and further behind their advantaged peers. Figure 8 sums up the consequences.

(i) *Parent Empowerment Programme*

The vicious circles of underachievement and hunger have to be broken and this can be accomplished if parents have knowledge of proper child care, such as personal hygiene, nutritional value of food, proper ways of handling and preparing food, simple but effective ways of stimulating children's development and spacing of birth. Parents have not only to be educated but also

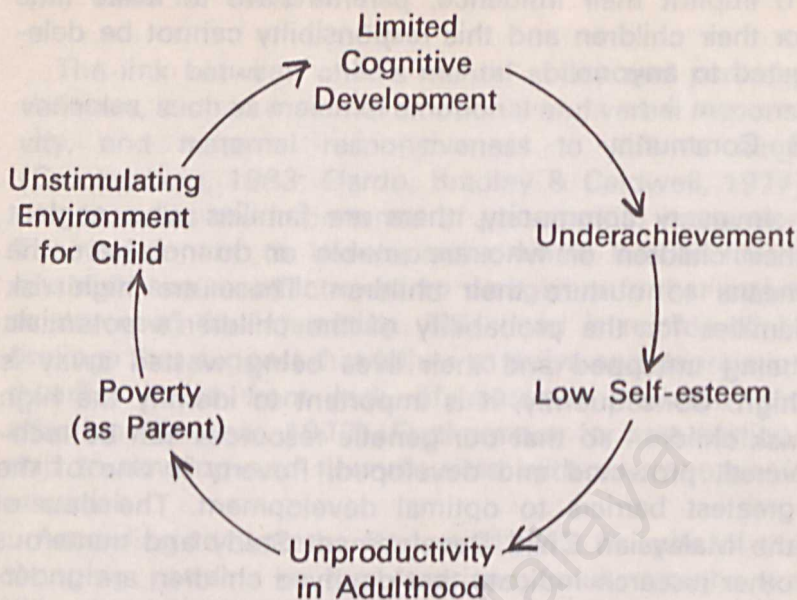


Figure 8: Underachievement Circle

The same vicious circle is obtained for hunger as presented in Figure 9.

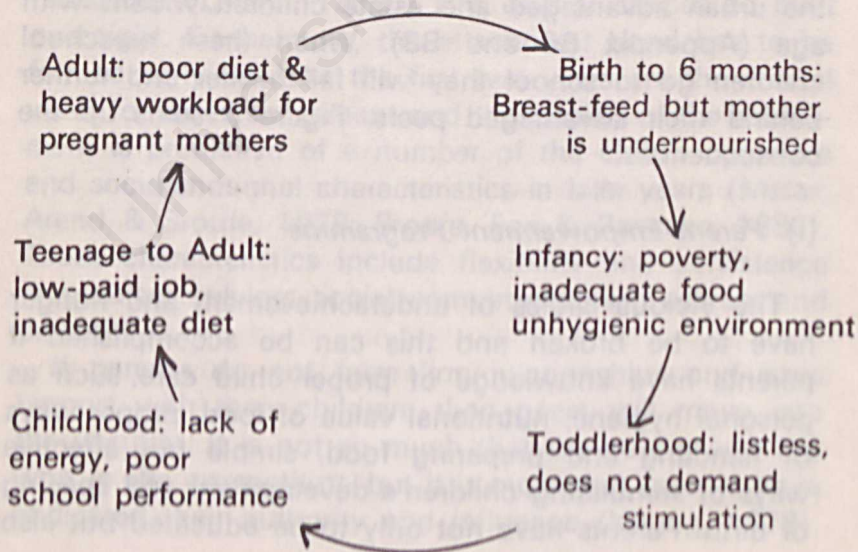


Figure 9: The Hunger Circle

to be empowered to provide proper child care. The headstart programme which was launched to provide impoverished children in America with an enriched environment was ineffective until the inclusion of parental involvement (Darlington et al., 1980). According to Urie Bronfenbrenner (1974), for any intervention programme to succeed, participation of the family is crucial because the family is the most effective and economical system for facilitating and sustaining the child's development.

In my paper, "Family Development in the Context of Child Development" which was presented at the First National Conference on the Caring Society (1990), I recommended that parent education be conducted at three stages. Firstly, family education be provided at the secondary school level to enable adolescents to perceive the seriousness of sexual relationship, the sanctity of the relationship, the consequences of casual sex and the responsibilities of parenthood. The second stage is when couples register for marriage. At this stage the couple should understand the functions of family. The third stage is for mothers and fathers, especially the first timers. At this stage, when the mother is carrying the child, both parents should know proper child care and not merely prenatal care.

(ii) *Child Care Services*

Although parents should remain as the child's primary care provider, alternative child care should be available to complement and supplement the experiences which the child receives at home or to meet specific needs (such as those of mothers working outside the home). Certain homes are so impoverished that supplementary programmes offered by child care centres and kindergartens are highly desirable for the child's physical and psychological development. Even in these situations, the goals of the child care centre and the home and the

values imparted by them should be complementary and should not be conflicting. Child care centres can also benefit children from homes which are already providing stimulation for development because there are experiences in child care centres which are not available at home. These include interactions with age-mates, balance between competition and cooperation, and sharing with non-family members. Another important task of the kindergarten is its function as a transition between the informal setting of the home and the formal system of the primary school.

It is imperative that child care services should be carefully monitored to ensure that the programmes are not detrimental to the child's development, the quality of the service and the professional integrity of the child care operators. It is not uncommon for the child care centres to offer services different from what has been advertised. The monitoring should not be the responsibility of the Ministry of National Unity and Community Development alone but the onus should also be upon the parents themselves, consumers' organisations and the community.

(iii) *Counselling and Support Services*

Tables 8 and 9 show that the number of reported cases of child abuse, drug addiction, juvenile delinquency child prostitution and problem children are increasing over the last few years. We have no means of knowing the actual number but it is safe to assume that the reported number falls far short of the actual number. It is often said that for every one reported case, there are ten undetected. The figures in these two tables are large enough to indicate the pressing need for counselling and support services. These people require help rather censure. Unless they are assisted to identify the roots of their problems and are rehabilitated, their psychological disorder will worsen and many other lives will be affected.

Table 8

**Number of Social Problems in Peninsula Malaysia
in 1985-1989**

Year	Juvenile Delinquent	Prostitute	Abused Child	Abandoned Child	Drug Addict
1985	3877	420	72	13	9591
1986	3857	592	171	11	7329
1987	4052	534	149	9	7596
1988	3978	337	191	6	9710
1989	4191	594	276	12	6960

N.B. The figures indicate the number of new cases for the year. The number of prostitutes include only those who are 20 years old and below.

Table 9

**Number of Disciplinary Problem Children in
Primary and Secondary Schools**

Year	Sample Size	Number of Indisciplined Children	Percent
1985	1,191,233	82,423	6.9
1986	2,542,336	112,697	4.4
1987	2,809,226	163,095	5.8
1988	2,300,417	330,005	14.3

Financial cost will escalate as the number of cases increases and as the problem deepens.

To illustrate this point, let us take the case of physical abuse. Besides the physical pain, the victim also sustains

psychological wounds which are much harder to heal. Physically, he may be healed but, psychologically, he is still hurting inside. Most abused children feel guilty - often blaming themselves, feeling responsible for the anger or dislike in their parents. Abused children feel unloved, unworthy and rejected, resulting in feelings of helplessness and unworthiness which lead to low self-esteem and feelings of insecurity. Feeling unloved, they do know how to love. Thus, they have few friends and may even withdraw within themselves and become social isolates. Most of these children, having low self-esteem and emotional hang-ups, become ineffectual parents.

The abuser also needs help. Quite often, the abuser is one who has been abused. Even if, the abuser has never been abused himself/herself, the act itself suggests that the abuser is psychologically unsound to lose self-control, to be immune to the pain and stress of the child or to be sadistic. Giving the abuser a prison sentence or imposing a heavy fine may not be an effective deterrent because, in a highly emotional state, the abuser may not have the rationality to think of the fine or imprisonment. Furthermore, imprisonment can drive the wedge deeper into the abuser-victim relationship. The victim may feel more guilty for putting the parent into prison and causing further hardships for the family. Consequently, the relationship is strained further. Placing the child in homes will create more psychological problems for the child. In addition to the feelings of an abused child, the victim is now deprived of a family and, in the adolescent years, the feelings of being rejected and rootless will be magnified. The better strategy is to provide counselling services that will (1) assist the perpetrator to resolve his/her psychological problems and to be equipped with better parenting skills and (2) enable the psychological wounds of the victim to be healed.

However, the best strategy is to take preventive mea-

asures. One of these measures is to identify high risk families and help them to perceive child abuse as a sickness and not as a crime so that they will be willing to come forward for help before the act is committed. Clinics staffed by professional counsellors should be set up in areas where there tend to be a concentration of high risk families (for instance, in crowded areas where housing and financial problems prevail, father absence or poor father or mother model). Alternatively, existing health clinic services can be extended to include mental health counselling. However, the counsellors should not be confined to child abuse but should be of assistance to all high risk people. The Government has succeeded in providing health clinics in rural and urban poor areas. Hence, the Government should be equally competent to set up mental health or well clinics.

C. The Nation

Today's infants, preschools and adolescents will either be tomorrow's builders and leaders or tomorrow's destroyers, cadgers and hang-ons. The mental and economic status of the nation in the year 2000 and beyond depends on the children of today. They will be the ones responsible for building up Malaysia or pulling it down; they can either be a citizenry of lovers of peace and justice or lovers of oppression, aggression, violence and hostility; and they can either be promoters for the preservation of the environment or promoters for its devastation. Children are also the transmitters of social and moral values as well as the agents of change and custodians of continuity. In short, they are our future. Hence, it is imperative that from the very beginning, not only should opportunities for optimal development be given but development for basic values should also be given high priority.

Although parents and other family members provide the primary environment for the child's development, especially during the early years, the nation through its

authority, has tremendous influence on the child. The nation also has as much responsibility as the parents and it should, therefore, work with parents and the community to ensure the protection, survival and development of our heritage.

(i) *Special Education*

Every child, irrespective of his abilities or disabilities, has the right to optimal development. Although there are schools for deaf and dumb, blind, physically handicapped, mentally slow and retarded children, the facilities are far from being the best. Even places are insufficient for those who need the special education. Worse still are those categories of special children whose needs have not been catered for. Among them are hyperactive, dyslexic and speech defective children, and children with other learning disabilities.

There is still another group of children whose needs have, so far been neglected by the nation. These are the gifted children. We can ill-afford to lose these special genetic resources. While on one hand, certain parents need to be restrained from compelling their nongenius children to aspire for genius status, on the other hand, it is highly vital that provisions be made to nurture children with exceptional abilities, irrespective of whether the potentials are intellect, leadership, fine arts, music, drama or sports. Of all the special talents, high intellectual potential is the most neglected and yet this genetic resource is the one which we can least afford to let it go to waste.

The reluctance to make special provisions for this group of children arises from the feelings that these children are fortunate to be so specially endowed and a bright mind can make it on their own. Studies have shown that 20%-30% of school dropouts are gifted (Lemov, 1980; Ogilvie, 1973; Rice, 1980). The gifted

usually find the normal school curriculum unchallenging and boring, resulting in loss of interest in school work and failure. Furthermore, they perceive problems differently and do not solve them in the ways expected by teachers and examiners. While the majority of us look at the world in three dimensions, the gifted ones see it in four. To become productive and adjusted individuals, these children need special education, not only to develop their high intellectual potentials but also to cater to their special emotional needs. Rice (1980) comments, "On the contrary, intellectual and creative talent cannot survive educational neglect and apathy."

(ii) *Early Childhood Education*

In our educational system, the better qualified teachers are assigned to teach the upper grades while the lower ones have less qualified teachers. Thus, while teachers of secondary school, especially those of the upper secondary, are graduates, teachers of primary school are college trained. The majority of kindergarten teachers are either untrained, receive on-the-job training or trained on a part-time basis by their associations or agencies. A handful of them are trained overseas. Although the Institute of Special Education in the Ministry of Education has conducted training for preschool teachers since 1972 (though not continuously), this training is only available to key personnel or selected preschool teachers. Child minders are in a worse position. Most of them have little education, no training in child care and no knowledge of child development. It was only in 1985 that the Department of Social Welfare (which was then the Ministry of Social Welfare) began basic training in child care for child minders.

The training of the different categories of teachers and caregivers becomes less demanding and less rigorous as the age of children decreases. Entry qualifications are

correspondingly lowered. But, the first few years of life are the most crucial to the child's development and this period is also one of rapid growth and development. Research findings indicate that sensory stimulation from the environment affects the structure and organisation of the neural pathways in the brain during this formative period (Dobbing, 1987). Hence, it is needless to say that the caregiver has to know the what's and how's of stimulating the child's development. Over- and non-stimulation may be equally injurious to the child's growth and development. The behaviours and attitudes of caregivers have been found to be more important than the curricular offerings of the day care centres. The National Day Care Study (Ruopp et al., 1979) indicated that children with caregivers who comforted, praised and provided them with guidance had higher standardised IQ scores than those children whose caregivers did not display these behaviours. The former set of caregivers had training in early childhood education and child development while the latter group did not receive training in these two areas. The findings, undoubtedly, demonstrate the necessity of properly trained caregivers.

Although research has shown that children are amazingly resilient, particularly in the earliest years, and they have the potentials to recover and develop normally when the adverse or unfavourable conditions are reversed, nonetheless, they cannot attain the optimal level. If the critical or sensitive period is long past, that area of development can be adversely and irreversely affected. For example, if the attachment bond is not established within the first two years, the child's social and emotional development are crippled (Rutter, 1979).

In his document, "Towards a Fair Start for Children", Robert Myers (1991) has given eight reasons for investing in early childhood development. These are:

1. Human Right: children have a right to live and to develop to their full potentials.
2. Moral and Social Values: values are transmitted through children. That transmission begins with infants. To preserve desirable moral and social values in the future, one must begin with children.
3. Economy: society can benefit economically from investing in child development, through increased production and cost savings.
4. Programme Efficacy: the efficacy of other programmes (e.g. health, nutrition, education, women's programmes) can be improved through their combination with programmes of child development.
5. Social Equity: by providing a "fair start", it is possible to modify distressing socio-economic and gender-related inequities.
6. Political Reason: children provide a rallying point for social and political actions that build consensus and solidarity.
7. Scientific Reason: research evidence demonstrates forcefully that the early years are critical in the development of intelligence, personality, and social behaviour, and that there are long-term effects associated with a variety of early intervention.
8. Changing Social and Demographic Circumstances: the increasing survival of vulnerable children, changing family structures, country to city migration, women in labour force, and other changes require increased attention to early care and development.

For two of these reasons, there is already sufficient ground for investing in early childhood development. In our society, consumerism, competition and egotism are rapidly replacing altruism, cooperation and solidarity as core values. Since children are our future and

through them values are transmitted, development of basic values in children should be given high priority and must begin in the earliest months and years of life.

Secondly, early childhood programmes have the potential to increase children's physical and mental capacity, especially those in the lower social economic status. Since our study discloses the progressive gap in the higher order cognitive skills between advantaged and disadvantaged children, early childhood education will help disadvantaged children to be better prepared for schooling. This is likely to lead to improved progress and performance. Schooling has been found by several studies to increase productivity through acquiring skills to organise knowledge and transfer knowledge from one situation to another, and facilitating technological adaptiveness (Colclough, 1980; Grawe, 1979; Lockheed, Lau & Jamsion, 1980; Rogoff, 1980; Triandis, 1980).

There is also investment in health, nutrition and psychological development through the early childhood programmes. These investments bring economic return through cost savings by curtailing work losses, by cutting down of later need for social programmes, by reducing remedial programmes in school and dropouts and by lowering health cost.

Our educational system should adapt with the changing needs of the world and nation. Early childhood education should be an integral part of our educational system and not an annexe to the main stream or the concern of the family. It should be a concern of the nation.

Universities, being at the forefront of knowledge, should keep up with time and the changing needs of the nation. The Faculty of Education has too long been concentrating on producing secondary school teachers. Departments in early childhood education and child development should be set up in our local universities not only to offer courses in these areas and to train teachers for preschools but also to encourage research in these

areas. Most universities in developed and developing countries have acknowledged the importance of these areas and have established departments or centres to carry out research, to offer courses and to train personnel.

Human resource development has become increasingly vital in view of high technology and industrialisation but, most of all, in view of the rapid depletion of natural resources. Genetic resources have to be carefully nurtured to ensure not only the nation's development but also its survival. The importance of human resource development is unquestionable. At the National Seminar on "Towards a Developed and Industrialised Society: Understanding the Concept, Implications and Challenges of Vision 2020", human resource development consistently and persistently surfaced as one of the most fundamental issues.

(iii) *National Child Development Centre*

In view of the significance of child development and human resource development in the development of our nation, the establishment of a national child development centre is highly desirable. The need to have a centralised body to develop and monitor children's development arises from the fact that child development is multidisciplinary. Although child and adolescent psychology plays an important role in child development, other disciplines are also involved. These include obstetrics and gynaecology, paediatrics, maternal and child health, parasitology, nutrition, sociology and education.

Although positive strategies should be undertaken to ensure the realisation of children's potentials, nevertheless, there are children with problems which range from congenital to acquired. No matter what the sources of the problems are these children need help. At this moment, most parents and teachers do not know what should be done and where to get help. I too am in the dark.

We receive numerous queries and appeals for help. We feel terribly helpless and inadequate because we do not know, for instance, whether there are speech therapists in Malaysia. We even have no notion of the child psychologists in Malaysia whom we can call upon to help us. Parents with autistic, hyperactive or problem children rang us from various parts of Malaysia because they know of only one Child Development Centre and one child psychologist. Our list of parents who want their children to be tested to identify the problems gets longer and longer. This queue arises not only from the fact that more and more children are having problems but also from the lack of facilities and manpower.

The establishment of a national child development centre will help to resolve the present state of affairs (which can reach a state of crises) and to plan for long-term objectives. This centre can attain these two purposes because

1. It will be able to assess the needs of the country to plan, monitor and supply the manpower needs.
2. It can mobilise and coordinate whatever expertise we have at the moment to ease the problem.
3. It can function as a resource centre to give information, advice and help to parents, caregivers, teachers and those who are concerned with child development.
4. It can serve as a net-working centre to link up with the various agencies, institutions and centres that carry out research and/or provide services related to child care and development.
5. It can encourage, sponsor or carry out research in child development.
6. If necessary, it organises or conducts training for key personnels in the different areas of development.
7. It functions as a policing and advocating body for issues pertinent to child and human resource development.

If we establish such a centre we will not be the only country to have one. Many countries, including China, have child development centres because of the recognition that the man begins with the child and the physical, mental and economic well-being of the nation is dependent upon the physical and psychological states and productivity of its people.

Conclusion

The best way to bring this inaugural lecture to a close is by leaving you this thought, the future of your children, their children, their children's children and the nation is in your hand.

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APPENDIX A

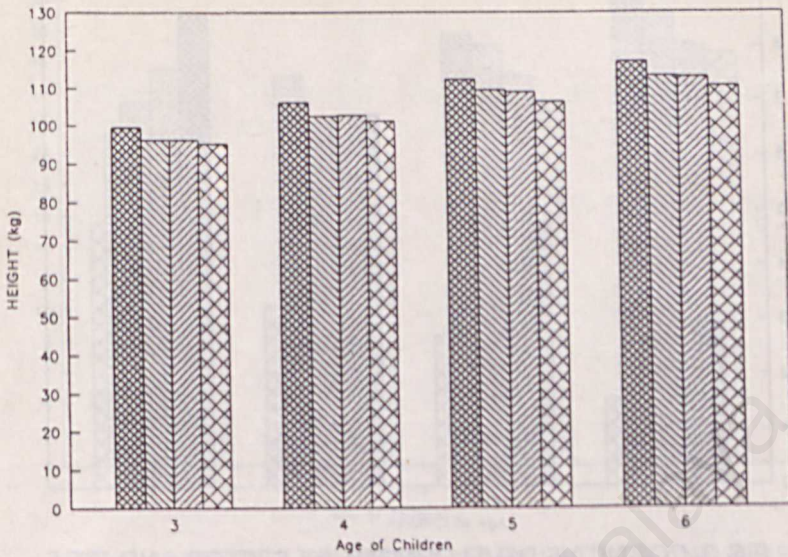


FIG 1. HEIGHT OF CHILDREN BY SECTOR AND AGE

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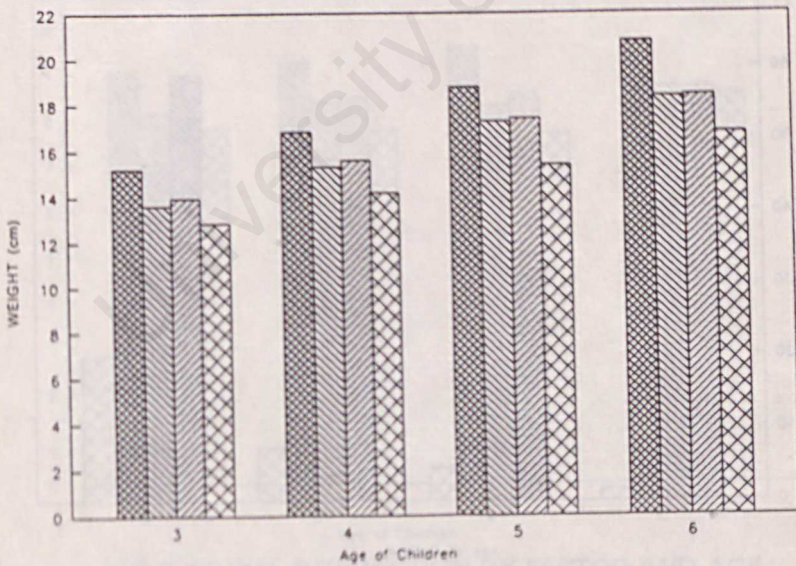


FIG 2. WEIGHT OF CHILDREN BY SECTOR AND AGE

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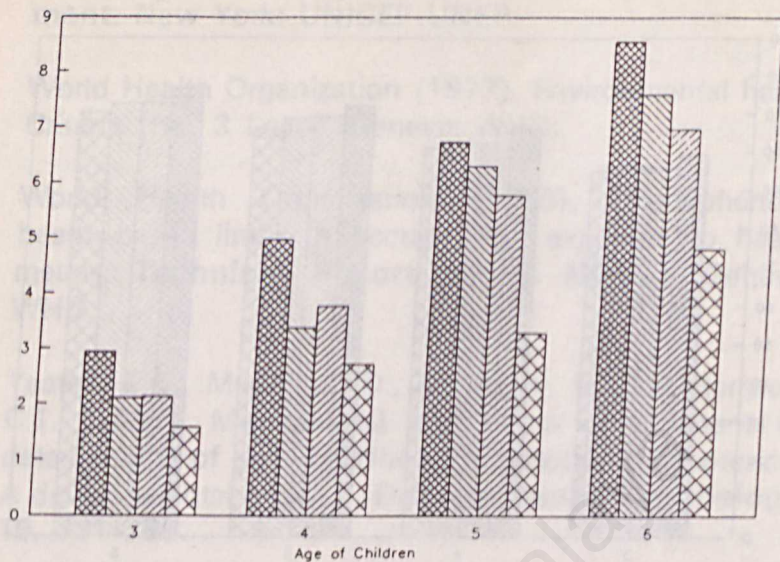


FIG 3. COGNITIVE DEVELOPMENT BY SECTOR AND AGE

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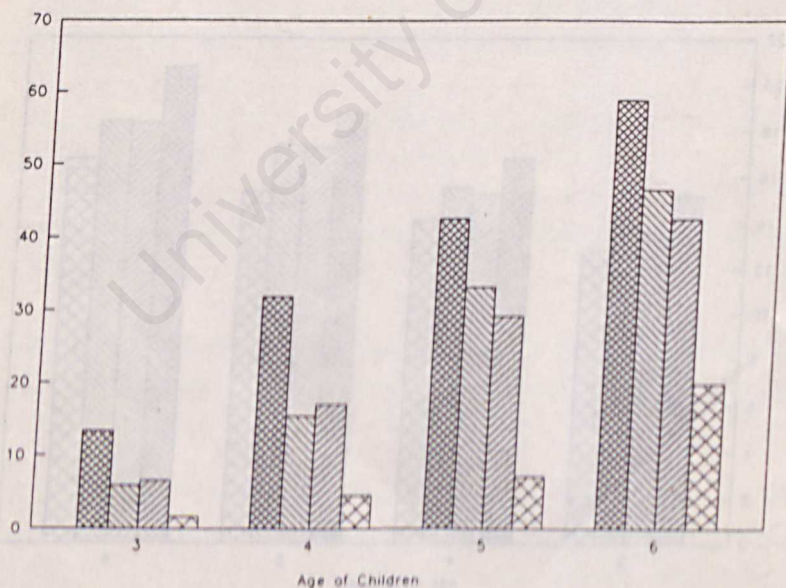


FIG 4. REASONING MASTERY BY SECTOR AND AGE

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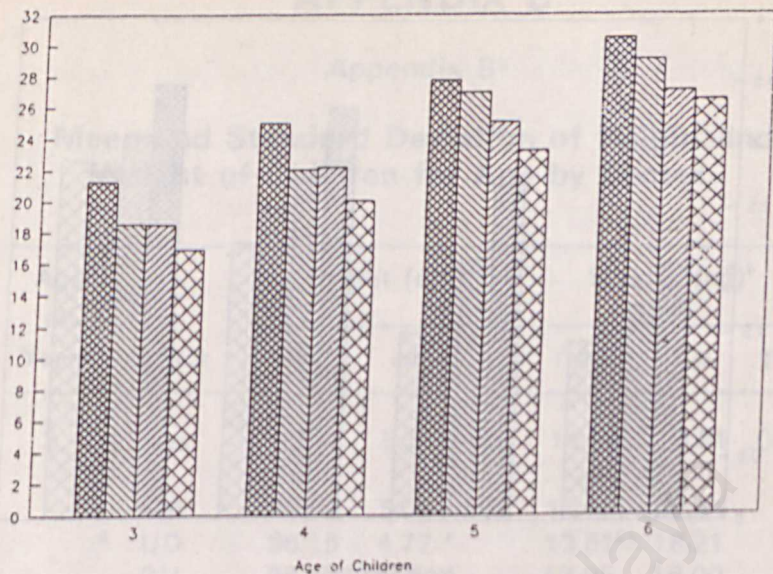


FIG 5. LANGUAGE DEVELOPMENT BY SECTOPR AND AGE

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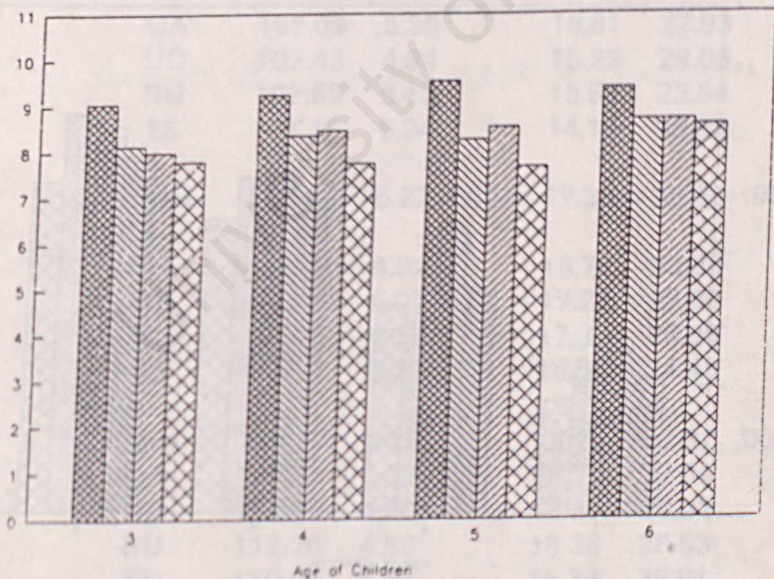


FIG 6. SOCIAL INTERACTION BY SECTOR AND AGE

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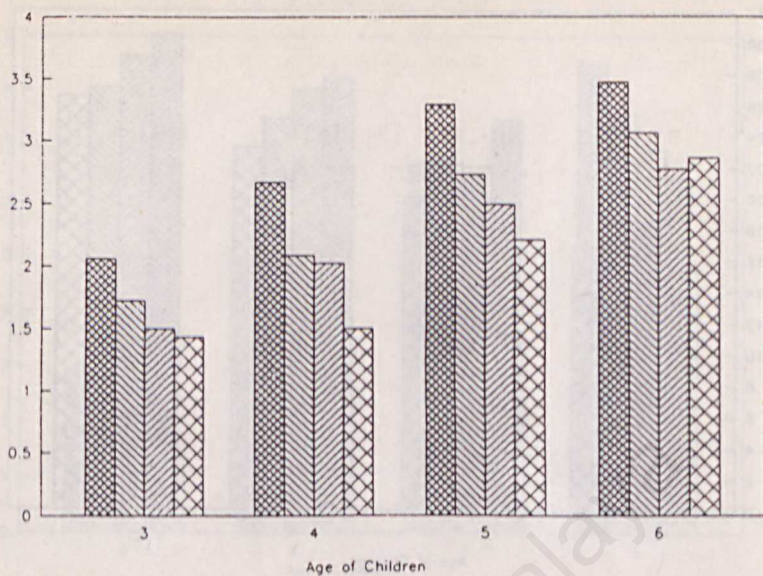


FIG 7. BASIC EMOTIONS BY SECTOR AND AGE

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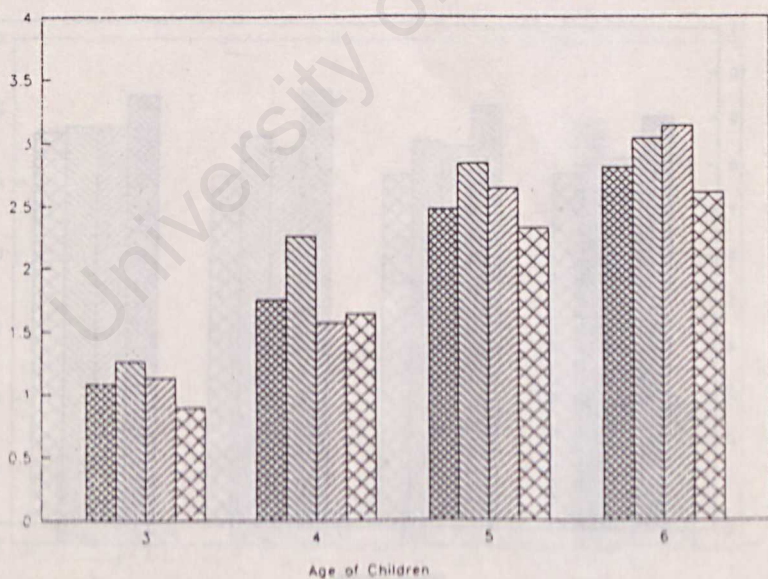


FIG 8. EMPATHY BY SECTOR AND AGE

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APPENDIX B

Appendix B1

Mean and Standard Deviation of Height and Weight of Children for Age by Sector

Age in Years	sector	Height (cm)			Weight (kg)		
		mean	s.d.	p	mean	s.d.	p
3	Total	96.97	5.11	.00	14.56	20.91	.00
	UA	99.52	5.00		15.22	22.44	
	UD	96.15	4.77		13.61	18.21	
	RU	96.19	4.88		13.95	18.00	
	ES	95.29	4.66		12.86	17.84	
4	Total	103.22	5.57	.00	15.57	26.84	.00
	UA	106.09	5.39		16.81	27.93	
	UD	102.43	4.94		15.29	29.06	
	RU	102.65	5.43		15.56	23.54	
	ES	101.18	5.34		14.15	19.89	
5	Total	109.28	5.22	.00	17.36	30.33	.00
	UA	112.21	4.92		18.76	33.80	
	UD	109.37	5.01		17.24	27.06	
	RU	108.83	4.72		17.37	28.90	
	ES	106.31	5.78		15.36	24.43	
6	Total	113.47	5.18	.00	18.73	32.37	.00
	UA	116.81	5.07		20.75	37.64	
	UD	112.99	4.52		18.31	28.02	
	RU	112.76	4.89		18.38	28.63	
	ES	110.28	5.25		16.74	28.81	

Appendix B2

Cognitive Development by Sector and Age (Means)

Age (Yrs)	Total	Sector				F-ratio	p
		UA	UD	RU	ES		
3	2.30	2.94	2.10	2.13	1.59	16.45	.00
4	3.82	4.97	3.38	3.77	2.71	25.40	.00
5	5.78	6.73	6.29	5.76	3.29	38.26	.00
6	7.30	8.56	7.59	6.97	4.80	17.22	.00

Maximum score = 17

Appendix B3

Language Development by Age (Means)

Sector	Age in Year				F-ratio	P
	3	4	5	6		
Total	19.17	22.53	25.82	28.22	358.59	.00
UA	21.26	25.02	27.77	30.46	96.48	.00
UD	18.57	22.04	27.00	29.06	145.87	.00
RU	18.54	22.16	25.08	27.06	134.36	.00
ES	16.92	20.03	23.24	26.48	37.10	.00

(Maximum Score = 59)

Appendix B4

Social Interaction by Age and Sector (In Means)

Age in Years	ALL	UA	UD	RU	ES	F-ratio	P
3	8.24	9.05	8.13	7.99	7.78	8.73	.00
4	8.45	9.23	8.35	8.45	7.73	10.39	.00
5	8.52	9.54	8.26	8.53	7.66	18.20	.00
6	8.78	9.37	8.67	8.68	8.55	2.32	.07

Appendix B5

Recognition of Basic Emotions by Age and Sector (In Means)

Age in Years	ALL	UA	UD	RU	ES	F-ratio	P
3	1.71	2.06	1.72	1.50	1.43	10.44	.00
4	2.11	2.67	2.08	2.02	1.50	24.49	.00
5	2.66	3.29	2.73	2.49	2.21	22.13	.00
6	2.99	3.47	3.06	2.77	2.86	8.27	.00

Appendix B6

Reasoning by Sector and Age (Means)

Age (Yrs)	Total	Sector				F-ratio	p
		UA	UD	RU	ES		
3	.23	.40	.18	.20	.05	12.82	.00
4	.55	.96	.46	.51	.14	30.21	.00
5	.91	1.28	1.00	.88	.22	28.76	.00
6	1.36	1.77	1.40	1.28	.60	12.04	.00

Maximum score = 3

Appendix B7

Reasoning: Percentage of Mastery by Score, Sector and Age

	All	UA	UD	RU	ES
3 years					
N	776	223	190	261	102
	5.1	9.8	2.6	4.2	1.0
4 years					
N	779	201	178	269	131
	14.2	29.8	7.8	12.6	2.3
5 years					
N	906	172	178	415	105
	28.1	44.2	29.9	26.8	2.9
6 years					
N	491	102	122	232	35
	46.8	63.7	50.8	41.8	17.1

Appendix B8

Problem Solving by Age and Sector (Means)

Age (Yrs)	Total	Sector				F-ratio	p
		UA	UD	RU	ES		
3	.16	.23	.12	.16	.07	3.79	.01
4	.49	.70	.44	.52	.17	11.73	.00
5	.90	1.08	1.07	.91	.23	22.51	.00
6	1.21	1.66	1.31	1.11	.29	17.27	.00

Maximum score = 3