

THE ROLE OF PRE-UNIVERSITY EDUCATION IN THE DEVELOPMENT OF HUMAN CAPITAL

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ABSTRACT

The role of education has evolved and undergone paradigm shifts, from that which focuses purely on imparting knowledge to the present one which encompasses career development of individuals to fulfil the needs of the global job market. The question that begs an answer is when (at what stage of education) does the aspect of career development or vocational awareness become significant, and how can educators better equip students at this stage? Looking at the developmental needs of young learners – primary and secondary levels – a broad-based curriculum approach is necessary in order to develop the academic aptitude, learning skills and create the body of knowledge necessary for the students to make the right choice in pursuing their tertiary or professional studies and perhaps disciplines of personal interests as well. Hence, we believe that pre-university level education has significant impact on shaping ‘what’ and ‘how’ students decide with regards to their career choices and this consequently impinges on the development of human capital in the country. This paper will document paradigm shifts that have taken place over time that have led to the present global trends, and review some critical thoughts and issues arising within the context of developing human capital in Malaysia. The national agenda for manpower development as outlined by the government shall also be considered. This paper will attempt to highlight the important role pre-university education can play in the development of employable graduates within the Malaysian context.

Key words: human capital, pre-university studies, globalization, paradigm shifts, global trends in education.

BACKGROUND AND SCOPE

The higher education sector which encompasses pre-university level and tertiary level studies has been the focus of keen attention over the last two decades. This has been particularly so in the recent 5 to 8 years in Malaysia due to the increasing demand for higher education as a result of socio-economic development and the impact of globalization in Asia.

In investigating the role and impact of pre-university studies on the development of human capital in Malaysia, this paper will give a brief historical overview of the paradigm shifts that have occurred over time and thereafter look at the global trends in education today that have led to the focus on education as a means of developing human capital. The second half of the paper will look at issues of human capital development within the Malaysian context and examine the role of pre-university education in promoting the development of human capital. Statistics on the growth of private education will be discussed. Some views on the conduct of programmes from the present trend in government bodies, along with those from institutions of higher learning, including private and public colleges, university colleges and universities and other popular pre-university programmes

like the GCE Cambridge A-level and matriculation programmes from Australia and Canada, will be drawn.

The review of the foreign pre-university programmes will also take into consideration curricular aspects of the programme including subjects offered and methods of learning and assessment. This is to establish the role and impact of such programmes on the development of students' academic interest and subsequently, their choice of tertiary level studies which will eventually determine their career, vocation or profession.

A HISTORICAL OVERVIEW OF THE ROLE OF EDUCATION AND THE PARADIGM SHIFTS OVERTIME

The quest for knowledge is an inherent part of mankind and it is this thirst to come to terms with and understand the environment that he lives in that has been the main motivator of mankind's move forward. This instinctive inherent need for knowledge and the passing down of knowledge, has evolved, through the development of literacy, into a formalized process of knowledge acquisition within an institutionalized framework that makes existing knowledge available in a format that is easily passed down and understood. Even then, for many generations such formalized education was only available to an elite group of people. This situation has held true for many centuries. With the advent of the post industrial age and the growth of capitalism, pre-tertiary education looked to equipping communities of learners with the ability to read, write and do arithmetic which equipped them with skills for administrative work (Kendall et al., 2004). At this point of time education was not seen as a right of all and a means to bring about economic prosperity. Economic change took place and those who had the relevant skills filled the niches of needs. The focus and the roles of the universities were towards teaching and carrying out research and were not linked to any specific economic or social imperative (Gunasekara, 2004). Education as a whole at this point still remained an activity that was available and was engaged in by a privileged and academically elite group.

A major paradigm shift took place in the late 1800's with education being made available to the masses. At this point education began to be seen as a means to an end and as a way to achieve better economic status. From this point the role of education began to evolve, from the purist view that education is for the academically elite and aimed at producing reflective individuals, to the pragmatic view that education needs to train people with knowledge and skills that are necessary for the workforce. From here on end education began to mean different things to different people. Historical global events such as the Second World War resulted in a major change in "political boundaries" especially in Asia, when previously colonized countries gained their independence. This resulted in another major paradigm shift in education and its focus. Emerging nation states of the mid-twentieth century viewed education as a way of catching up with the industrialized West. Thus, it can be said that the main objective of education systems that were formulated at this point, was focused to bring about economic and national development by educating the masses through exposure to a variety of fields, and in this way to identify and nurture various talents to fulfill various economic and social growth needs of these emerging nation states. However, while the architects of economic and social change looked on education and these institutions as the agents of the changes that they wanted to effect, universities still remained

focused on its two historical roles which are; teaching and research (Charles, 2006). Thus, there began to emerge a gap between the education that was being provided, which laid emphasis on literacy and numeracy; and the needs of the various groups of people, which was to acquire specialized or specific skills that enhanced their economic viability.

To the governments of today's nations, education cannot only focus on promoting literacy among the masses. It has to now take on greater dimensions of building human capital that contribute to the economy and the credibility of the nation state. The education systems and their focus now determine the success of the nation state in the eyes of the world and give it its competitive edge (Power, 2000; Marginson, 2007). To the individual, on the other hand, education is the means towards obtaining a marketable qualification and to become gainfully employed; to organizations, education may be viewed as an investment to develop the capabilities of the employees or workforce who in turn will contribute towards the organizations' bottom-lines; and finally, to the nation or society at large, education translates to tangible and non-tangible benefits in many areas. Whatever the case may be, it is undeniable that education today has become the crucial means for developing human resource or human capital.

GLOBAL TRENDS IN EDUCATION TODAY

As stated earlier there has been a marked paradigm shift in educational trends that now look to education as a vehicle for economic improvement through the development of human capital (Parellada & Bertran, 1999; Gunasekara, 2004; Charles, 2006). This marked shift in the perception of education has come about from the fast paced changes that have taken place over the last century that has led to the emergence of a knowledge based society. As Bascones, Bertran, Becker and Beaumol (cited in Parellada & Bertran, 1999) pointed out " ...society now expects universities to carry out the functions that changes have brought about in a competitive and global market and have spontaneously assigned [this task] to them." These changed expectations have brought about the need to evaluate and formulate education systems that can cope with and fulfill the following: cultural leadership needs, the need to create knowledge through curricula and syllabi that is innovative and dynamic enough to keep up with the fast paced changes taking place in technology and communications (Ward, 1994; Eggins, 2003). This has led to an increase in privately held or owned educational institutions that offer education services from primary to tertiary levels. Added to this, regional policies in most countries have been to increase literacy levels by increasing participation in both primary and secondary levels resulting in more and more students becoming eligible to seek admission into institutions of higher learning which are state owned or privately owned (Mat, 1998). This has led to an increase in global competition in the education market and a wider range of career paths that are available to students who are eligible for admission to these institutions (Wellings, 2007).

Looking at these global trends in education brings up the question of how well does the Primary and Secondary levels of education prepare these students to make career choices that increase and enhance the pool of human capital that gives that particular country the edge as a global player. The education system and curricula in countries such as America seem to support this for it gives students a wide range of subjects to choose from that gives them a broad base of experience which takes them into their freshman year of

university. And yet when it is time for them to decide on their major field of study in their second year, they face problems (Hansen, 2009). U.S education experts have acknowledged that there are weaknesses in the system and that it has failed to create centres of knowledge production and innovation (Education Futures, 2008). On the other hand, countries that favour the English system of the 'O' Level exams do seem to have a wide range of subjects available to students that give them the exposure that they need to explore their interests and abilities, and to determine what area they would like to major in at tertiary level. However, what limits students is that at the end of their course of study, they are limited by the number of subjects they can sit for in the exam. Therefore, two years of study of a set number of subjects is tested and graded in set exams. This contrasts with the American system that allows students to experience a wider range of subjects because it is based on a grade point evaluation system that is cumulative and is semester based. Hence, it can be said that for education systems that have been modeled on the English system, there seems to be a wider gap, in the education students receive at primary and secondary level that needs to be linked before students are ready to make informed choices on career paths. The limited number of subjects offered as they prepare to leave school and embark on tertiary level education do not quite prepare them to make choices in what to specialize in when they move on to tertiary education. This is where pre-university programmes such as the A-Levels, Matriculation and Foundation programmes come into play. These programmes form a bridge to help students move from a school learning environment which is guided by set curricula to the more open curricula of Universities where students have to become autonomous learners with the ability to investigate and do research and to present their findings. The range of subjects offered in these programmes also gives students a better idea of the fields of studies that are open to them. This interim period between school and university is a crucial period in the development of the student to pause and consider the path he or she wants to follow before plunging in. This is the point in time students will also have an idea of how well they can cope with higher end knowledge and skills that would be necessary when they move on to tertiary education and specialized fields. This is the scenario that exists in the Malaysian context.

HUMAN CAPITAL - UNDERSTANDING AND CONTEXT

What is Human Capital?

To understand the value of human capital from a simplistic angle, we can view people with knowledge, skills, good health or positive values as 'assets' as they are able to generate some form of financial benefit or return-on-investment (ROI) for business enterprises thus contributing towards the economy. The understanding of the economics of human capital over the last two decades has brought about a particularly dramatic change in the way people view investment into education and the type of education they invest in. This is because the vocation or profession chosen can markedly influence the income generating potential of an individual throughout his/her adult life, and even beyond as people today continue to work in their sixties and seventies.

The Malaysian Context

The explanation of human capital therefore indicates that education today has taken the dimension of an investment that should bring returns. This is reflected in the dramatic changes which have taken place over the last two decades in Malaysia in the way investments in education are being viewed.

At the beginning, Malaysian higher education was dependent on government investment in public institutions of higher learning. But today, this has been opened up and business entities have been allowed to become players in the field of providing higher education. With this expansion has come an influx of associations with universities in America, Britain and Australia which provide those with the necessary economic power a wider range of choices. To facilitate the move for students from the public schooling system into these foreign programmes, these private institutions also provide pre-universities programmes.

This has emphasised a weakness in our system where the emphasis in schools is on literacy and numeracy through public exam systems. Some attempts have been made to introduce subjects such as economics at this level but this has not been enough to bridge the gap. What this mean is that the focus in schools is towards the passing of exams which does not leave much avenue for students to explore their abilities and capabilities that could help them determine their future career paths.

This observation has been corroborated by the *Koridor Utara* or Northern Corridor Implementation Authority (2008), who noted that although the Northern Corridor Economic Region had a competitive cost position in labour as compared to countries such as Taiwan/Singapore and Vietnam/Indonesia, it lacked an average supply of skilled labour to give it an edge. The authority also identified some weak areas in education where they noted that secondary schools are more focused on providing counseling in personal issues and the fact that at the pre-university level - (*Sijil Tinggi Pelajaran Malaysia (STPM)* - Higher Malaysian Education Certificate) - career development guidance was also not provided. The observation made by this authority demonstrates that there is awareness of the economic value and social significance with regards to the profession or vocation a student chooses to undertake. At the same time it also underlines that a gap exists in the education system at the point the student leaves school and enters tertiary education that will connect students to relevant career paths that support economic development. This seems to indicate that the pre-university education stage is a critical platform for human capital development. It is logical then, to focus on this stage of educational development in initiating a focus towards human capital development of a student because this is when most young people assess their aptitude and attitude, and determine what skill sets to develop in order to pursue and succeed in a particular field or profession.

In a paper presented at the *11th Malaysian Education Summit*, Ibrahim (2007) pointed out that 'the way forward' for Malaysian Education is to 'develop human capital with holistic individual character.' Therefore, public sponsors like the *Jabatan Perkhidmatan Awam* (JPA), government linked sponsors like *MARA* and *Yayasan Tenaga*, and corporate sponsors like *Petronas* and *Sime Darby* dedicate teams of professionals and many man-hours to identify suitable pre-university programmes and high achieving students to pursue these programmes as part of their scholarship undertaking to eventually qualify as accountants, engineers, doctors or other categories of professionals. This has now translated

into action by these bodies through a phenomenal increase in the number of scholarships that have been given out to sponsor students to take up pre-university studies in private colleges. This is evident in Sunway University College which has experienced a growth in the number of sponsored students enrolled in pre-university courses.

Added to this, parents are also willing to pay for the ‘best’ and the ‘right’ type of pre-university studies to avail their child or ward of the best opportunities for career and professional development. Clearly, this highlights the fact that the efforts and resources spent on developing talent and future leaders need to begin at the pre-university level because the role and impact of pre-university education on the development of human capital is well recognized by parents and sponsoring agencies.

To provide the quantitative backdrop, let us review some enrolment numbers in pre-university education, which will have flow-through impact on the future workforce. Some recent enrolment statistics show that the enrolment of students at local public and private institutions of higher learning has been increasing steadily over the past 8 to 10 years. Data obtained on tertiary level enrolments from 2002 to 2008 (Table 1) indicate such an ascending trend, with the exception of a slight dip in the number of tertiary enrolments in 2005 in the private institutions which was quickly corrected and the enrolments continued to grow in ascending trend thereafter. On the other hand careful examination shows that although the numbers have increased the % of the pool that is going to public institutions have decreased. In Private institutions on the other hand there has been a steady increase from 44% in 2002 to 48% in 2008. From this we can see that more students from the pool are enrolling in private institutions if they can secure sponsorship or if the family finances allow them to.

Table 1. Enrolment of Tertiary Level Students in Local Public and Private Institutions over the last 5 years (2004 – 2008)

<i>Type of institution</i>	<i>2002</i>	<i>2003</i>	<i>2004</i>	<i>2005</i>	<i>2006</i>	<i>2007</i>	<i>2008</i>
<i>Public</i>	337,944	354,275	367,305	390,828	424,343	481,685	521,696
<i>Private</i>	294,600	314,344	322,891	258,825	323,787	365,800	399,852

Source: The Star (2009), “Star Biz Week”, 6 June, pg. 17.

On further examination of the composition of students in tertiary level studies, we note that the increase in tertiary student enrolment consists of enrolments at the matriculation and certificate level programmes at public institutions and that of certificate level students in private higher institutions. The matriculation and certificate programmes at private higher institutions actually refer to the provision of pre-university programmes. Therefore, what the data suggests is that the Ministry of Higher Education, by subsuming the private offerings of pre-university education under its umbrella together with the ministry’s overall planning for tertiary level studies, also holds the view that pre-university

and tertiary level education possess commonality and create similar desired outcomes in future graduates.

Table 2 shows the overall student enrolments in matriculation and certificate level programmes at public and private higher institutions amount to 119,358 students as on 10 August 2008. Similarly, the number of students enrolled in undergraduate studies at public and private institutions at the same period account for 421,747 enrolments. In addition to these numbers, another 316,818 enrolments are recorded in Diploma level programmes at public and private institutions, not including the numbers enrolled in professional courses and higher degrees.

Table 2. Number of Enrolments in Matriculation, Certificate, Undergraduate and Postgraduate Enrolments (as on 10 August 2008)

Type of institution	Admissions	Enrolments	Graduates
<i>Public</i>			
Matriculation	6,957	10,242	4,509
Certificate	25,670	48,499	19,176
Diploma	52,278	139,045	37,660
Undergraduate degree	75,127	270,156	59,844
Postgraduate diploma	1,779	2,956	2,065
Master's degree	16,158	36,094	8,655
Doctorate	3,644	12,243	785
Professional	450	1,249	196
Others	1,260	1,212	81
Total	183,323	521,696	132,971
<i>Private</i>			
Certificate ¹	47,875	60,617	18,269
Diploma	91,483	177,773	32,685
Undergraduate degree	43,261	151,591	26,590
Master's degree	2,924	8,540	962
Doctorate	303	1,331	55
Total	185,846	399,852	78,561

Source: The Star (2009), "Star Biz Week", 6 June, pg. 17.

Note: ¹ Refers to matriculation and pre-university level programmes like A-level and Grade 12 certificate.

Clearly the chase for paper qualifications can be traced from the pre-university level to the undergraduate and graduate levels. In the same token, from the trends that we have looked at, it can be seen that human capital development needs formal education to impart the expansion of scientific and technical knowledge, as stated by Becker (2007) that has taken place in the last few centuries. This in turn has led to the raised productivity of labour and other inputs to production which, in turn, has led to increase in the demand for a workforce that is skilled. Hence, the best place to emphasise and help form decisions on career paths would be at the pre-university level where young people, with information and

experience through learning, would then have a better idea of their capabilities and increased maturity to decide on their best career path.

PRE-UNIVERSITY STUDIES – CURRICULUM FROM SUNWAY UNIVERSITY COLLEGE

Today, pre-university or matriculation level programmes offer a wide range of subjects that will provide students with the necessary academic underpinnings and foundation for the students to pursue professional and technical qualifications at the tertiary level in public or private institutions of higher learning, locally or abroad.

For example, the Canadian Matriculation or Grade 12 programme offers a wide range of subjects covering key academic disciplines in *Mathematics*, *English* and the *Sciences* whilst allowing room for students to explore their interest in subject areas like '*Business Leadership*', '*World Issues*', '*Social Diversity*', and '*Communication Technology*'.

In Sunway University College's own Foundation in Arts (FIA) programme, there are subjects in the liberal arts like '*Culture and Ideas*'. '*Psychology*' has also become a popular choice amongst students in the FIA and the Cambridge A-level programmes. Similarly, pre-university students in the Monash University Foundation Year (MUFY) undertake interesting subjects like '*Globalisation*' together with other academic subjects that will allow them to specialize in business and accounting, and even biotechnology and engineering at university level.

Interestingly, the GCE A-level programme which has a history of more than 150 years has also expanded its range of subject offerings to enable students at the pre-university level to expand their interests and explore subject areas which can impact their decisions on their choice of career or profession. Many A-level students take up subjects like *Mathematics* and *General Paper* to develop their critical thinking, analytical and problem solving skills, whilst exploring subjects which are new to them like *Law* and *Psychology* which they have not encountered in their secondary school education prior to pre-university.

Today, students at pre-university level are also provided with counseling and career guidance, which was not common practice until the mid-eighties. With proper guidance and counseling, plus the correct selection and combination of subjects, pre-university students are set to achieve greater success when they pursue tertiary level qualifications or to attain specialist qualifications in specific disciplines including the arts, communication and media, or enter professional practice in fields like medicine, accounting, law or engineering. Hence, the pre-university journey and experience have significant impact on career choice of the individual and human capital development for the society at large. From an informal angle, our personal and professional experiences and that of many colleagues in private higher learning institutions who have been involved in providing career guidance to pre-university students; the feedback from students whom they have counseled is that their career guidance have helped them make correct career decisions. That these students are now successful in their respective professions or vocations validates our point that pre-university education, coupled with proper career guidance, can make significant qualitative and quantitative impact upon future human capital.

It is therefore clear that students begin their exploration of different subjects and disciplines of studies at pre-university level, and private institutions of higher learning

generally offer a wider range of subjects, often with greater diversity, breadth and depth of study when compared with the local STPM option.

An observation that can be made here is that the above developments also suggest the need for more study to be conducted on how the public high schools and the Ministry of Education in Malaysia may want to review the range and type of subjects offered under the current STPM programme, and introduce more updated courses that would meet the interest of students and develop competencies that are required in the workforce of today and tomorrow. Aspects of the STPM curriculum that would benefit from some enhancement initiatives would be the inclusion of courses to develop soft-skills, critical thinking and communication skills.

HUMAN CAPITAL DEVELOPMENT - EDUCATION, INNOVATION AND VALUES

The Ninth Malaysia Plan (2006) stated that in order for Malaysia to meet the increased demand for skilled human resource, a total of 597,384 skilled workers were produced by training institutions and 4.8 million training places for skills upgrading were provided by *Pembangunan Sumber Manusia Berhad* during the 1991-2005 period. At the same time, opportunities for skill enhancement and lifelong learning were also expanded through the establishment of community colleges and open universities, which also offers certificate and matriculation programmes. The report also stressed the need for tertiary and training institutions to be more aligned with industry in order to better meet the needs of employers. To this end, the Ninth Malaysia Plan provided the following data on the proportion of students in colleges or institutions at the secondary and tertiary levels.

Since the Sixth Malaysian Plan of 1990 to the end of the Eight Malaysian Plan in 2005, there has been a significant increase in the participation rate of students engaged in secondary and tertiary education as can be seen in Table 3. There has been a 20% increase in the number of students in secondary schools and an approximately 43% in tertiary and pre-tertiary education. But obviously, this is not enough. The Ninth Malaysian Plan has emphasised a need for Malaysians to recognize the importance of technology and knowledge intensive industries, as well as greater awareness in fields such as ICT, bio-diversity and biotechnology and to increase their engagement and involvement in these fields.

Table 3. Access to Education, 1990-2005

	1990	2005
Participation Rate (%):		
Pre-school (4-6 years old)	33.1	60.0
Primary	93.2	96.0
Secondary	68.0	85.0
Tertiary ² (17-23 years old)	16.9	29.9

Source: Ministry of Education and Ministry of Higher Education, as cited in Ninth Malaysia Plan (2006), p. 8

Note: ² Refers to degree, diploma, *Sijil Tinggi Persekolahan Malaysia*, matriculation, A-level and post-*Sijil Pelajaran Malaysia* certificate.

Another factor that has also been stressed here is that the development of human capital also requires the nurturing and instilling of a progressive outlook and moral and ethical values in youths of today. Within the schooling system, and particularly at the high school and matriculation levels, moral education through '*Sivik dan Kewarganegaraan*' subject will be expanded, and community level programmes that promote volunteerism and religion will be encouraged (9MP, p. 33). This thrust in educating our young people on positive values, ethics and social responsibility is continued at the pre-university level in private higher institutions with subjects like Moral Studies and Malaysian Studies which are prescribed as compulsory subjects by the MoHE. In Sunway University College, the Canadian matriculation programme further enhances this area of development by incorporating a compulsory 10-hour study unit on Community Involvement in its curriculum.

In order to achieve the overall goals and plans for human capital development, efforts need to be intensified in developing the country's human capital from the pre-university level onwards, in order for Malaysia to drive transformation to a knowledge-based economy. From the discussion it can be seen that pre-university is the best time to bridge students as they move from childhood to adulthood in their education since they are still guided as they are brought to maturity in their ability to make informed choices.

CONCLUSION

The changing landscape of education and the need for it to address and contribute towards the economic growth of the nation has brought into play the need to be focused in guiding the young of the nation in making wise and informed choices in choosing their future career paths. The crucial role pre-university education plays in the development of human capital to support the aspirations of the nation towards achieving the goals of Vision 2020 is thus undeniable. This is because the increasing number of students qualifying to move from secondary education into tertiary education emphasizes the need for a bridge to help them move from a medium where a lot of guidance is provided, to a medium where they have to become independent-learners. Added to this, students who leave secondary education at this point may not have the maturity to make informed decisions of the career paths they should choose. Thus, the role of pre-university education is not only to provide the bridge to move them from the secondary mindset to the tertiary mindset. It has now morphed into becoming the point at which students should be given the relevant guidance, counseling, exposure and skills to also decide on their future career paths wisely.

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