

**Dr. C. W. W. Kannangara
Memorial Lecture - 26**



**"Dr. Kannangara's Reforms and Emerging
Knowledge Economy in Sri Lanka"**

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Former Professor of Education

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13th October 2015

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Department of Research & Development
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Dr. C.W.W. Kannangara's Reforms and Emerging Knowledge Economy in Sri Lanka

It is indeed with great pleasure and honour that I accepted the invitation extended to me by the NIE to deliver the 26th Kannangara Memorial Lecture. NIE is doing a great service to a very remarkable and pragmatic educationist Par Excellence, Dr. C.W.W. Kannangara by annually organizing this lecture series not only to honour his contributions towards the development of a national system of education but also to share the thinking and philosophy of some of the eminent educationists in this country pertaining to Dr. Kannangara's contribution to education and Sri Lankan education in general. I think all children enrolled in the Sri Lankan state schools and universities should be encouraged to understand the educational philosophy of Dr. Kannangara as beneficiaries of his educational reforms implemented during the State Council era when the country was still under the British occupation. Educational philosophy and reforms of Dr. Kannangara should be included in the school and teacher education curriculum in order to tell the younger generation that there were indigenous educationists who were in the forefront during the colonial rule to realize the objective of 'education for all' which was not yet a declared policy during the 1940s even in the international fora. From this perspective Dr. Kannangara should be considered as a futurologist who thought very much ahead of his time.

In this presentation, I wish to make a few comments on the significance of Kannangara reforms and shall make an attempt to relate them to the current educational issues confronted by our motherland and importantly to the emerging knowledge economy in Sri Lanka.

There is a definite need for all the stakeholders of education including the people of this country to participate in reformulating the education policies to contribute towards the building of knowledge economy to make Sri Lanka competitive at least among the developing countries of the world. Failure to do so will be totally unfair by the future generations of this country. The present century is described as knowledge based century and the emerging economy is described as knowledge economy, the characteristics of which will be discussed in some detail in this lecture. In keeping with the ideals and requirement of knowledge economy I wish to reiterate the inevitability of making our society a knowledge society and eradicate all factors that are forcing a section of our society to remain ignorant. Prof. A.V. Suraveera in his 22nd Kannangara Memorial Lecture (2011) mentioned that Kannangara was responsible for paving the path towards a knowledge society at a time when such terminology was not even within use in the vocabulary. In fact it was the management expert and futurologist Peter Drucker who forecast the emergence of knowledge economy in his book 'Post capitalist Society' which was published in early 1990's.

To go back to elaborate the significance of Kannangara reforms, one index of his achievement is that around 400 students from the plantation community which is the most disadvantaged in the country are now enrolled in the state university system as beneficiaries of Kannangara's Free Education scheme. Another 10000 GCE A/L qualified candidates are available from the plantation community who aspire for teaching positions for the first time in the 200 years of their history in Sri Lanka as a result of free education facilities available to them. Already there are at least 10000 teachers and a few university lecturers, education officers, doctors and lawyers among the community. While these are remarkable achievement, it should be mentioned that the

number enrolled in the state universities is remarkably low when compared to their total population of 1.5 people in the country. Even in all other professions the situation is the same. As I understand, most of them are from 'line rooms' where plantation workers live. Whatever improvement achieved by them in education in recent times could be attributed to Kannangara's policies. The example of the plantation community is given here because to show how Kannangara's policies benefitted a most disadvantaged community in Sri Lanka. They are sometimes referred to as 'plantation community' with the idea that all of them are plantation workers. This situation has now changed and an estimated number of 600000 people live outside the plantations and this spatial mobility could be partially attributed to Dr.Kannangara reforms. Policymakers of plantation agriculture have already issued warnings that plantations are going to face labour shortages in the future mainly in view of the migration of workers. After Independence around 400000 workers lived and worked on the estates and now the numbers have dwindled to only 200000. It is common knowledge that the educated estate youths would like to migrate to urban areas and seek 'urban' jobs which they consider as more decent. They are in fact 'late starters' in education. In other words, Kannangara reforms could function as a factor 'for cutting the grass roots of the plantation community'. There are several examples of this type of upward mobility taken place in various parts of the country which go unnoticed and undocumented.

We come across hundreds of academics and officers holding high positions in government who were beneficiaries of Dr.Kannangara reforms. In fact, my teacher in the university Prof.S.Muthulingam dedicated his first book on education to Dr.Kannangara because he was also a beneficiary of free education.

Another aspect of the Free Education scheme was that the successive leaders of the country inspired and encouraged by Kannangara's Free Education scheme went on to strengthen and consolidate it by introducing additional measures such as free textbooks, free school uniforms to school students and Mahapola and bursaries to university students. Former presidents J.R. Jayawardana and R. Premadasa and Former Minister Athulathmudaliwere in fact extended and expanded the Free Education scheme because of the founding philosophy of Dr. Kannangara which provided a rightful opportunity in education for disadvantaged groups irrespective of class, ethnicity and language.

Free education was criticized by its opponents that the scheme was not an innovation because vernacular education was already given free in Sri Lanka. But what really happened was the doors of secondary and university education were opened to weaker sections of the society paving the way for social mobility to them. If not for reforms pertaining to Free Education and mother tongue as medium of instruction these sections of the society would not have been able to access school education and university education.

Two opposing viewpoints about education and social mobility are in place in the international academia. For Althusser, a FrenchMarxist Philosopher, for the survival of the capitalist class which is the ruling class the reproduction of labour power is essential. According to him, the role of education in capitalist society is the reproduction of the social class system for the

benefit of the capitalist class. He argues that the reproduction of labour power requires not only a reproduction of its skills, but also a reproduction of its submission to the ruling ideology (Haralambos, 1998, p 180). In other words, education systems in capitalist societies help the capitalist class the supply of cheap labour with limited education. It is argued that even the curriculum in the schools in the capitalist societies reflects and serves the ideology and interests of the capitalist classes with an upper class bias towards their wellbeing and most suitable for children from that class. This is the outcome of the Marxist analysis of the sociology of school curriculum. Accordingly, the school curriculum during the colonial era reflected the colonial interests and that of post-colonial Sri Lanka reflected and strengthened the upper class interests and therefore it is a fallacy to argue that free education promoted the interests of down-trodden.

American economists extended the argument put forward by Althusser and said that the major role of education in capitalist society is the reproduction of labour power. From their viewpoint a large part of the justification for the inequalities of capitalist society is provided by the education system. From this Marxist perspective social mobility through education is only an illusion.

The proponents of this view could say that in spite of six decades of Free Education Scheme and other welfare measures still 4.2 percent of the Sri Lankan belong to the 'no schooling' category and 13.1% of the estate population also belongs to this category. But it should be noted that the percentage of this category has come down drastically since the introduction of Free Education scheme.

There is a view which emphasized that extending educational opportunity in Sri Lanka was an 'unfinished task' initiated by Dr. Kannangara in 1940s and the completion of this task requires renewed efforts and the commitment by the policy makers. This task also requires multi strategies at all levels and in all sectors of the education (SwarnaJayaweera, 1989).

This above view is further strengthened by a statement made by the National Committee for formulating a new Education Act for General Education in 2009. According to this committee 'in spite of the provision of free education... the existence of vulnerable groups leave the target of universal, compulsory education unachieved. The committee went on to identify the following vulnerable groups who were in need of special attention:

- (a) Economically Disadvantaged children.
- (b) Disabled children
- (c) Displaced children
- (d) Children in the plantation section
- (e) Street children
- (f) Children under Institutional care.

From 1930s we see the emergence of a clear child welfare policy leading to a more developed concept of the rights of the child. Dr. Kannangara contributed enormously to the development of

these policies through his attempts in promoting equality of opportunity in education. Consequent to Kannangara reforms the Constitution of Sri Lanka (1978) guaranteed that the states shall promote with special care the interest of children so as to ensure that their full development, physical, mental, moral, religious and social and to protect them from exploitation and discrimination.

A National plan of Action for children (1991), a children's charter (1992) and the regulations for compulsory education (1997) provided a strong legal, base for the child's right to education.

In spite of all these measures in addition to Kannangara reforms, we have failed to provide the right to education for a number of deprived and excluded children as mentioned above.

A dossier prepared by Coalition for Educational Development (2007) identified the issues and made some concrete proposal to meet the educational requirements of these deprived children. A summary of the issues and advocacy necessary are given below:

Issues – Some examples

- Lack of economic resources prevent parents in poverty groups from enrolling their children in schools and engage them in child labour.
- Inequitable distribution of quality education facilities in the country.
- Lack of information, a major contributory factor which negatively affects policy and programme development for this category of children.
- Lack of awareness among parents and communities to provide uninterrupted education in disaster situation.
- Slow progress in uplifting the provision of infrastructure and other facilities to schools in the disadvantaged areas (Ex: Plantation schools)
- Need to improve the family conditions of street children.
- Norm Based Unit Cost Resource Allocation Mechanism which prevented the rural schools with a small number of children to get their due share of resources.

Advocacy necessary – some examples

- Lobby for policies and programmes to universalize basic education of the (5–14) age group and increase access to other education levels to bring the most disadvantaged sections of the school age population within the ambit of the formal and non-formal education system.
- Enforce compulsory education regulations in collaboration with National Child Protection Authority and community based organizations.
- Promote an effective proper National Economic and Social policy to address the issues of inequality.
- Formulate policy direction and legal provision to ensure the right of education of children with disabilities and implementation of inclusive education.

- Accept affirmative action as a national education policy and accelerate the development process of plantation schools that are yet to be developed.
- Increase and strengthen non-formal centres to provide relevant knowledge, skills and attitudes to street children. (source: Coalition for Education Development Dossier, 1997)

It is also necessary for the state to give high priority to education when allocating funds for national development. The purpose is to maintain equity, adequacy, quality and excellence. The National Committee for Formulating a New Education suggested that the state allocation for education should be maintained at not less than 4% of the GDP and 12% of the total government expenditure. The proponents of substantial increases in the government expenditure on education indicate that it is very low in Sri Lanka when compared to the international trends and even to the trends in developing countries of south and South East Asia. According to the Central Bank and the University Grants Commission data government expenditure on education in 2011 was 9% of the total government expenditure and 1.86% of the GDP. It is argued that what parents spend on the education of their children should not be taken as government expenditure on education because 'sum of the parts exceeds the whole' and therefore it is ridiculous. A study of international trends reveal that there are countries which spend 25% of the GDP and 50% of the total government expenditure on education (Ex: Urbania, Ruritania). It depends on the priority given to education by the respective governments.

In the case of Sri Lanka, the proponents who demand substantial increase of state expenditure are of opinion that the increase would support Free Education and expand educational opportunities of marginalized sections identified above. This is the answer to the opponents who argue that the increase demanded is irrelevant and the proponents do not have any proposals or plan on the modalities of spending the added allocations in the future. If the Sri Lankan state has to continue with the policy of promoting equity and equality in the area of education, these marginalized groups should be given due recognition and gradual increase of educational expenditure as promised by the present government is indispensable.

Contrary to the negative postulations put forward by Marxist analysts about contribution of education to social mobility several national and international studies reveal that education is one of the key instruments for occupational mobility. Educated workers are more likely to move to a high level of occupation and schooling has a strong effect on the likelihood of moving to a high level of occupation (NachumnSicherman, 1990). The impact of further education on occupational attainments is greater than the impact of basic education (Konig, Bachman and Sacclu, 2000). Coleman, (1965) looked upon education as a master instrument for changing attitude, for transforming social structures and for determining new social political patterns. Education was pointed out as a Great Equalizer and to raise the level of employability of the poor and disadvantaged and thereby enhance their life chances (Hussen, 1974)

Leading Sri Lankan scholars who studied the Sri Lankan welfare policies since 1940s have indicated that 'by adopting a bold and radical approach Kannangara Report ranks the single most important social document in Sri Lanka's social and political development' (Jayasuriya, 2003).

According to Jayasuriya, all educational policies of this period (1940's) were highly significant in that they opened up opportunities for greater social mobility ... in principle, opening up access to occupations such as medicine and law previously monopolized by the western educated middle class (ibid). Free education became the single most important factor in determining the transformation of Sri Lankan society in the latter part of the 20th century irrespective of ethnicity, religion and language. The leftwing leader and intellectual of at that time (1940) Dr. N.M. Perera described the educational reforms as 'amazing revolutionary objectives'.

Mean years of schooling is a new indicator that sheds light on the average educational level of national populations. An educated workforce is considered a critical factor in economic development, and in the present context establishing a knowledge economy. Mean Years of Schooling (MYS) provides the number of years of education completed by a country's adult population (25 years and above). This new data set includes more 100 countries. It is also used in the calculation of UNDP's Human Development Index. This new data set provides a stark picture of the hurdles faced by countries lacking a sufficiently educated adult workforce. Overall, the data show improvement over time as countries have increased over time.

It is very encouraging to see that Sri Lanka performed very well in respect of this indicator as a developing country. The country is economically developing but educationally advanced as indicated by recent mean years of schooling data set.

Sri Lanka has done very much better than the neighbouring countries in South Asia and some of the countries in South East Asia. She is also competing very well with some of the high income economies of the world (See Table Below).

With 10.8MYS in 2013 Sri Lanka was very much ahead of India (4.4), Bhutan (2.5), Bangladesh (5.1) and Pakistan (4.7) in the same year. Sri Lanka is also ahead of Thailand (7.3), Philippines (8.9) Turkey (7.6), Malaysia (9.5) and South Africa that are relatively doing well in the sphere of economic development. Relevant data pertaining to some of the economically advanced countries of this west are given below.

Table 1: Mean Years of Schooling – Selected Countries – 2013

Countries	MYS(Years)
Norway	12.6
Australia	12.8
Switzerland	12.2
Netherlands	11.9
U.S.A	12.9
Germany	12.9
Sweden	11.7
Hong Kong	10.0
Japan	11.5
Italy	10.1
Spain	9.6
Portugal	8.2
Sri Lanka	10.8
China	7.5
Singapore	10.2

Source: UNDP, Human Development Reports .

It should be noted that Sri Lanka is very close to some of the advanced economies and surpassed some advanced countries such as Spain, Portugal, Singapore and China. The comparable data for India, Pakistan and Bangladesh are below 6 years of schooling. For the purpose of this presentation I have to provide some comparative data in respect of Sri Lanka's performance in promoting literacy and school enrolment ratio. I am not elaborating this point as it is well known and widely documented (See Tables below).

Table No 2: Literacy Rates in Selected countries (Recent Data)

Countries	Literacy Rates %
Afganistan	28.1
Bangladesh	57.7
Bhutan	64.8
China	95.1
France	99
Germany	99
India	74.4
Korea	98
Malasia	93
Nepal	66
Pakistan	56
Philippines	96.3
Sri Lanka	98.1
Spain	97.7
Thailand	96.7
Global	84.1

Source: Wikipedia

Table No 3: Secondary School Enrollment in Asian Countries – 2013

Countries	Percentage
Bangladesh	54 (2012)
Bhutan	78
China	92
Fiji	88 (2012)
India	71 (2012)
Indonesia	83
Iran	86
Japan	102
Korea (South)	99
Malasia	71
Nepal	67
Pakistan	38
Sri Lanka	99

Source: World Bank Report (2005)

Data pertaining to MYS, literacy and school enrollment rates indicate the high performance of Sri Lanka although in the past it remained a developing country, experiencing shortfalls in financing education as discussed earlier. We are annually remembering Dr. Kannangara because his socially oriented education policies were primarily responsible for this excellent performance in education. This is the reason why M.S. Anay, representative of the Government of India in Sri Lanka stated in 1945 that **Dr. Kannangara would have been worshipped as a god if he were in India.**

According to World Bank experts, the Sri Lankan policy makers who designed the basic framework of the education system, in the 1930s and 1940s, were far ahead of their time in viewing human as a promising investment with the potential to produce a wide range of important economic and social benefits (Quoted in World Bank, 2005).

All these performances made, leading Sri Lankan educationist Prof. S. Jayaweera, to refer to Dr. Kannangara as one of the chief architects of the social development programme of the mid-twentieth century ...and the social policies underpinned this programme were responsible for the much vaunted in high Physical Quality of Life in Sri Lanka in the 1970s and 1980s.'

Prof. AmaruthyaSen noted in his analysis of 'direct support' by the state noted that the case of Sri Lanka was singled out as one of the remarkable achievement despite its low GNP. Judged in terms of life expectancy...literacy rate and similar criteria, Sri Lanka does indeed stand out among poor countries in the world' (AmaruthyaSen and Jean Dreze, 1999).

In recent times, especially since 1980s, with the introduction of the principles of open economy, liberalization policies and the declaration that 'private sector is the engine of growth' educational policy makers appeared to turn away from promoting egalitarian principles in education and adopting policies to suit the requirements of the private sector. The private sector came to be engaged in conducting seminars to spell out recommendations for education reforms without much concern for the egalitarian traditions. The emphasis was on vocational and technical education and soft skills necessary for the world of work.

Proliferation of international schools and private higher educational institutions were criticized as they were catering to the new rich that emerged as a result of the impact of globalization. Demand for foreign curriculum and English medium education could be catered by the new private sector institutes that were functioning as trading companies registered under the companies' ordinance and the Board of Investment. In other words, these international schools are functioning outside the national system of education and preparing the Sri Lankan children to live and work in 'another culture' since they use foreign based school curriculum. Education policy documents in recent times appear to recognize the reality of the existence of private international schools and suggested that there should be a separate unit in the Ministry of Education to deal with private and international schools...any private/international school must conform to the requirements laid down by the Ministry of Education..Individuals or organizations as corporate bodies should be permitted to establish private and/international schools to meet demand. There should be no restriction on the medium of instruction in the fee levying private schools and international schools (NEC report, 2003). There is no reference to the use of foreign based curriculum. The Report also of opinion that the 1961 Act No 08 (Assisted schools and Training colleges) should be amended or the act should be replaced allowing the non-government sector to establish schools. According to the provisions of the above Act 'no person shall establish any school... for the education of persons who are below the age of 18 years without the approval of the Director'. In other words, only the Government was empowered to establish and conduct schools for the children of school going age but these provisions are frequently and continuously violated by the private sector providers of school education.

This is a clear indication that the policy makers are now ready to accommodate these schools in the following manner:

- Private sector participation in education should be acceptable.
- Fee levying schools are allowed to function.
- Accepting international schools means, their right to make use of foreign curricula is also acceptable.

- These schools could continue with teaching in English medium.

Critics could argue that some of the fundamental principles of the national system of education are in jeopardy. It is true that the prevailing system of schooling with the above mentioned components would help to revive the duality and compartmentalism in education which prevailed during the British colonial rule. The English education and vernacular education dichotomy criticized by Dr. Kannangara appears to emerge once again. During the colonial rule an English educated elite class was institutionalized by the British rulers to bridge the gap between the rulers and the Sri Lankan masses. But now the dichotomy is helping to create a class of youth educated by the state system to man the state bureaucracy in which national languages are widely used. At the same time English medium education is producing youth to fulfill the needs to the multinational and other private sector entities expanding in the country with the blessings of the state policy. If the Colonial structures were the result of Morgan and Colebrook committees and Lord McCaulay's thinking, the post liberalization formulations such as private school and higher education institutions could be attributed to the pro neoliberal policies and realities of social and economic domain generated by the forces of globalization and the requirements of knowledge economy.

The emerging issue of inequality in education as manifested by the emergence of private education in the country is definitely antithetical to the educational philosophy propagated by Dr. Kannangara. This aspect needs further study as one of the new developments in Sri Lanka during this post colonial period. During 1940s Dr. Kannangara introduced various measures to eradicate the 'compartmentalism' based on medium of instruction which paved the way for Sri Lanka to establish a national system of education during the post-colonial era.

This memorial lecture is giving us an opportunity to analyze any deviation or distortion of the ideals enunciated by Dr. Kannangara and rethink about policies and measures to strengthen these ideals and bring about unity and solidarity among forces that fight for equity and egalitarianism in Sri Lankan education.

The emerging knowledge economy and its demand on education are entirely new phenomena and we are uncertain about the capacity and efficiency of the state school system to fulfill them. Moreover, changing patterns of the Sri Lankan economy and the emergence of new knowledge economy are replacing new demands on the education system that the international schools have emerged even without any restrictions placed by the government. This is a good example of spontaneous growth of educational institutions if the state fails to respond to certain societal demands at certain points of history. After the rise of such institutions attempts are made to introduce restrictions on them. Strangely enough the school system has also been permitted to introduce bilingual medium to teach some subjects in English medium mostly to give an opportunity for the rural children to learn in English medium as they cannot have any access to fee-levying international schools.

Knowledge: Definitions and characteristics

In recent times with the proliferation of the concept of knowledge economy mainly in the western world, the Sri Lankan policy makers also absorbed the idea and started formulating policies to promote the transformation of the economy into a knowledge economy.

In the education sector a project for Education for knowledge society was launched by the Ministry of Education with the support of the international funding agencies. It is argued here that education policy reforms of Dr. Kannangara and the subsequent attempts to establish a national system of education provided the foundation and the required infrastructure with a network of schools, favourable enrollment ratio and a stock of teachers to transform education to suit the needs of the knowledge economy. This is in view of the fact that quality education is one of the four important pillars of the knowledge economy.

My presentation would deal with some of the important characteristics and dimensions of knowledge economy. Knowledge economy is defined as one in which generation and exploitation of knowledge has come to play the predominant part in the creation of wealth. It is also about the most effective use and exploitation of all types of knowledge in all manner of economic activity. In simple terms a knowledge economy is one that uses knowledge as the key engine of economic growth. The idea of the knowledge driven economy describes not just use of the high tech industries but describes a set of new (knowledge) sources of competitive advantage which can apply to all sections, all companies and all regions, from agriculture and retailing to software and biotechnology (Ian Brinkley). In other words, economic success is increasingly based upon the effective utilization of intangible assets such as knowledge, skills and innovative potential as the key resources for competitive advantage. The term knowledge economy is used to describe this emerging trend.

Peter Drucker who was an eminent management Guru and futurologist who was among the first to observe the transformation of industrial economy into knowledge economies and the first scholar to coin the words knowledge economy and knowledge workers. According to him knowledge is the primary resource in the knowledge economy and land, labour, and capital – the traditional factors of production – do not disappear but they become secondary. In knowledge economy, knowledge is assimilated, created, disseminated and applied effectively to enhance productivity and economic development.

Four Pillar Framework

The successful transition to a knowledge economy typically involves elements such as making long term investments in education, developing innovation capacity, modernizing the information infrastructures, and having an economic and business environment conducive to market transaction.

World Bank termed these elements as the pillars of knowledge Economy and together they constitute the knowledge economy framework.

Specifically the four pillars of the knowledge economy framework are:

- 1 An economic incentive and institutional regimes that provides good economic policies and institutions, which promote efficient allocation of resources, and stimulate creativity and incentives for the efficient creation, dissemination and use of existing knowledge;
- 2 An educated and skilled labour force that continuously upgrades and adapts skills for efficiently create and use knowledge;
- 3 An effective innovation system of firms, research centres, universities, consultants, and other organizations that keeps up with the knowledge revolution, taps into the growing stock of global knowledge, and assimilates and adapts new knowledge to local needs; and
- 4 A modern and adequate information infrastructure that facilitates the effective communication, dissemination, and processing of information and knowledge.

The above framework asserts that investments and interactions among these four pillars are necessary for the sustained creation, adoption, adaptation, and use of knowledge in domestic economic production. (Joongha&Suh, 2007).

The Four pillar framework is emphatic about knowledge, knowledge assimilation, dissemination, creation and application and therefore signifies the importance of high quality school education and higher education in the buildup of knowledge economies.

Assimilation refers to acquisition of knowledge created internationally through higher education and research. New knowledge could be accessed through internet, academic journals and participation in international conferences. We need highly educated people to undertake this task and they are to be produced by a highly developed education system. The developing countries are advised by the international agencies to make use of the new knowledge available internationally in the development of technology based industries.

International knowledge transfer has been taking place for the past several centuries and it is not a new phenomenon. It is believed that the Western countries were beneficiaries of ancient Chinese, Arab and Indian science and mathematics. This occidental knowledge which gathered in North Africa was captured by Western European scholars who came in search of such knowledge in ancient times. Japan was ready to learn from China and Holland. In modern times it was Japan during the Meiji era made a policy decision to assimilate Western science and technology to strengthen the country to challenge the threat posed by the Western countries in the later part of the 19th century.

The assimilation of Western knowledge was made possible by sending thousands of youth to Western countries on study abroad programmes sponsored by the Japanese government and inviting Western professors to teach in Japanese universities. Even countries like Thailand borrowed Western science and technology, following the Japanese example and became a borrower of international knowledge.

Dissemination refers to spreading such knowledge throughout the society through the means of informal and non-formal education to make the society knowledgeable in the context of developing a knowledge society. Knowledge economy does not support the view to form an elite society monopolizing all areas of knowledge by a class of people. It calls for democratization of knowledge involving all sections of the people through a system of education based on equality of opportunities and equity principle. Sociological view of the development of science emphasizes that scientific knowledge and inventions have to be discussed and ‘negotiated’ in public fora to be revised and made acceptable to a wider international audience. Anyway, for the emergence of knowledge economy dissemination of knowledge throughout the society is sine qua non. It is understandable that well qualified and well trained teachers are necessary for knowledge dissemination. The international trends such as ‘Education for All’, ‘All Children Possess the capacity to learn’ and Inclusive Education’ are very relevant to knowledge economy in which dissemination of knowledge in the larger society is a cardinal principle of education. High rate of school enrollment and new structures for lifelong education are recommended for this purpose.

Creation refers to the production of new knowledge by the respective countries through research activities by the universities and other institutions of research relevant to the socio-economic needs of the country. Developing countries cannot depend on advanced countries to engage in research in all the fields that are relevant to them. They are expected to develop their own research personal, programmes and institutions to undertake research in the fields that require new knowledge and technology. We are already having research institutes pertaining to tea, rubber, and coconut. There is also an agrarian research institute which has done a yeoman service in respect of studying the conditions and needs of the farming community. While emphasizing the need for research facilities locally, orientation of higher education to produce a pool of talented researchers to undertake researches in the future is also an important point to be considered. All 15 universities in the country are already engaged in this function but now they have to think in terms of the requirements of the knowledge economy and should engage themselves in the training of researchers and undertake research in the relevant fields.

Application refers to the utilization of available knowledge in the production of goods and services. The application of knowledge is now in all areas such as entrepreneurship, innovation, R&D, and people’s education and skill levels. It is now recognized as one of the key sources of growth and competitiveness in the global economy. Application signifies how well economic systems are using appropriate knowledge to their productivity and increase welfare. In other words, the knowledge economy is not just about high tech industries (World Bank, 2007).

With the advent of knowledge economy and interest shown by the countries in it some new characteristics such as **saving knowledge, expiry and renewal of knowledge, knowledge workers instead of manual workers, management of knowledge and digital divide indicating the dichotomy between computer literate and illiterate** have gained currency in the contemporary globalized world.

There are at least a few alternative definitions or concepts of the knowledge economy closely related to the characteristics explained above.

- A) A part of the economy is involved in the production and distribution of knowledge. This distinguishes the knowledge economy from other traditional economies.
- B) A part of the economy is composed of knowledge intensive industries which means there are two sectors in the economy, namely,
 - I. Firms which employ highly educated and skilled people and
 - II. Firms that are not knowledge intensive with less educated work forces and use traditional production processes

C) The entire economy is characterized by production, distribution, and use of knowledge and place a key role for knowledge throughout the economy.

Even in traditional economic systems knowledge was recognized as a key factor (for example, knowledge of the soil, cultivation methods, seasons, crops, fertilizer etc in agriculture societies). But the impact of knowledge was seen as unexplained 'residual' and in modern times with the emergence of knowledge economy there are sophisticated models that incorporate and measure the contribution of knowledge and technology to the national product. This is a new area of research and it has been known as new growth theory which explains that knowledge is the main engine of growth. A recent cross country study of 22 advanced economies estimated that 70 per cent of recent economic growth was the result of advances in knowledge and technology. In other words, 70 per cent of the GNP is attributed to the knowledge and technology input in advanced economies.

Knowledge Economy and Education

Education is the fundamental enabler of the knowledge economy and is one of the four pillars of it. Well educated and skilled people are essential for creating, sharing, disseminating and using knowledge effectively in a global environment that is changing the types of knowledge and skills needed for economic success. It is obvious that without a highly educated population in the country with full awareness about human rights, rule of law and the fundamental principles of democracy it is not possible to establish an environment conducive for business promotion and promoting an innovative regime. These are other pillars of knowledge economy.

Primary and secondary education prepares the children not only for higher and all forms of tertiary education but also for lifelong learning. They also increase people's capacity to assimilate and use

information. Secondary and tertiary education should develop core and technical skills that encourage the creative and critical thinking inherent in problem solving and innovation. Higher education, in science and engineering is needed to monitor and even assimilate recent international trends in these disciplines and to use new technologies while assessing which are relevant to the needs of production and economy in general.

In the latter part of the 19th century, the Japanese policy makers sent thousands of students abroad to assimilate western science and technology on government scholarship and they invited hundreds of Western professors to teach and disseminate western science and technology through the Japanese university system. Japanese missions and scholars were sent abroad to study the education system and universities in the western world and on their return suitable aspects were introduced in Japan. The objective was to use western knowledge and models to strengthen and reorganize school education and university system in Japan. The Japanese rulers formulated policies of this nature- to learn from the West to defend their mother country from Western subjugation since at that time of history when several countries of Asia were already under the European colonial rule. At a later date Thailand which was not under European occupation decided to learn from the West to modernize the country. These are historical examples of assimilation of international knowledge for national development.

A culture of continuous learning and openness to new ideas is critical for a knowledge based economy. A lifelong learning system requires imparting learning skills at school level based on the principle of learning to learn, one of the competencies emphasized by the Sri Lankan policy makers. The system encompasses learning from all types of sources such as formal, non – formal and informal. The basic requirements of a lifelong learning system are comprehensiveness, multiple pathways to learning and multiple learning providers. To benefit from such a system, students must have the ability to acquire new skills, act autonomously, use tools interactively, and function in socially heterogeneous groups.

Lifelong learning systems are necessary in view of the knowledge revolution which encompasses the creation of new knowledge and technologies that are taking place throughout the world and the speed in which they are disseminated. Knowledge is fast becoming obsolete or even expires and needs renewal. In this stage of knowledge revolution, we cannot be mere observers but have to transform into participants in the revolution by actively seeking opportunities for lifelong learning to become effective members of the knowledge economy.

Another reason is the basic competencies required by the world of work in today's labour markets give an indication of the challenges faced by education systems. The new competencies identified for the knowledge economy are given below:

New competencies/soft skills for knowledge Economy

Cognitive: Language, communication, logistical and mathematical thought.

Problem Solving: Observing, analyzing, identifying the part of this problem, suggesting creative problems, suggesting creative solutions, critical thinking, planning and project management and adapting knowledge to new contexts.

Self learning and self knowledge: Being motivated to learn, concern with one's own development, knowledge of one's capacities, ability to transfer knowledge from one context the other.

Social: Working in a team, negotiating and constructive arguments, interacting, getting others to understand one's point of view and maintaining networks of social contacts. (Source: Vargas Zuniga, 2005)

The following Table gives priorities for middle income countries like Sri Lanka, and relevant policies at different levels of education:

Table No.04: Priorities for Educational Policies: Middle Income Countries

Primary Education	Secondary Education
Improve quality;	Aim for universal coverage in lower secondary.
Focus on completion of primary cycle target enrollment rates in poorer areas	Increase enrollment rates in upper secondary
Improve quality and relevant of teaching	Improve relevance for employment and life skills.
Tertiary Education	Lifelong learning
Aim to increase tertiary enrollment. Ensure disciplines and what the economy requires.	Strengthen qualifications for employment. Improve quality assurance and assessment mechanisms.
Promote different types of providers.	Strengthen system governance through multiple pathways.
Aim for international standards and transferability.	

Source : World Bank, 2007

The above table indicates the emphasis on both quantitative and qualitative aspects of education for knowledge economy. It is argued here that the quantitative aspect of education in Sri Lanka was looked after well by the policies of Dr. Kannangara.

To return to the issue of lifelong learning, providing people with the tools they need to function in the knowledge economy and acquire the competencies related to cognition etc. requires adoption of

a new pedagogical model, i.e, lifelong learning system. This model differs from the traditional model of education in many ways (see Table below)

Table No.05: Characteristics of Traditional and Lifelong Learning Models

Traditional Learning	Lifelong Learning
Teacher is the Source of learning	Educators are guides to sources of learning
Learners receive knowledge from the teacher	Learners learn from doing
Learners work by themselves	Learners learning in groups and learn from each other
Tests are given to prevent progress and students have completely mastered a set of skills.	Assessment is used to guide learning strategies and identify pathways for future learning.
All learners do the same thing.	Educators develop individualized learning
Teachers receive initial training plus ad-hoc in-service training	Teachers are lifelong learners. All training programmes are linked.
Good learners are identified and encouraged to continue their education; there is a selective principle.	People have access to learning opportunities over a lifetime.

Source: World Bank , 2003

In developing countries, five main policy actions are suggested for pursuing a lifelong learning strategy:

- 1 Improving access quality, and equity throughout the formal education systems.
- 2 Ensuring foundation skills for all.
- 3 Recognizing all forms of learning, not just formal courses of study.
- 4 Mobilizing resources and rethinking resource allocation across all sectors, settings and over the life cycle.
- 5 Ensuring collaboration among a wide range of partners (OECD, 2004)

Apart from the emergence of lifelong education as an alternative path to formal education there is a new vision of education in the knowledge economy which is listed in the table below. It shows the radical transformation and a paradigm shift in the educational ideas and practices that are emerging in the knowledge economies. Some of the shifts and trends are already visible in developed knowledge economies in the western countries, Japan and South Korea. As for developing countries like Sri Lanka this list of shifts is a very good reminder from a futurological perspective to the education policy makers. Books, textbooks, isolated classrooms, rote memory and competition as a method of learning and teacher as the only source of knowledge will disappear and give away for new paradigms. Technologies and electronic libraries are fast becoming the tools of learning, collaboration among students becoming method of understanding new knowledge, virtual and open learning instead of closed and traditional classrooms – These are some of the aspects of new paradigms (See Table below)

Table No. 6: Industrial Age and Knowledge Age Education – Emerging Vision

Industrial age	Knowledge age
Teacher as a director	Teacher as facilitator and consultant
Teacher as knowledge source	Teacher as co-learner
Teacher as sage on the stage	Guide on the side
Speaker Oriented	Question oriented
Book as a tool	Technologies as tools
Single Textbook	Electronic library
Isolated reading skills, literacy	Multiple literacy, communication skills in all media
Rote memory	Problem solving
Terminal education, graduation	Life- long learning
Classroom as world	World as class room
Competition with classmates	Collaboration with community of Learners
Classrooms as unit of learning	Virtual classrooms without walls
Administrative convenience	Conveniences of the learner
Time slotted, rigidly scheduled learning	Open, flexible
Theoretical, abstract, principles.	Real world concrete actions, and reflections
Drill and practice	Inquiry and design
Confirm to norm	Creative, divers
Fact based	Project and problem based
Test assessed by norms	Performance assessed by self, peer, experts.
Prescribed results	Open – ended results
Qualified person	Self – directed learner

Several countries are now in the process of transforming their education systems to be in line with the shifts mentioned above (See box below for Japanese example)

Education Reforms for knowledge society in Japan

The Seven Priority Areas

1. Improve the students basic scholastic proficiency in easy – to – understand classes
2. Foster open and warmhearted Japanese through Participation in community service and various programmes.
3. Improve the learning environment to one which is enjoyable and free of worries.
4. Promote the creation of schools trusted by parents and communities
5. Train teachers as educational professionals
6. Establishment of Universities of an international standard.
7. Establish a new educational vision for the new century to improve the foundations of Education

Towards the Achievement of a Life Long Learning Society- Japan

MEASURES TO PROMOTE LIFE LONG LEARNING IN JAPAN

1. Development of a structure to promote lifelong learning
 - Lifelong Promotion Law (1990)
 - Lifelong Learning Council (1990)
 - Lifelong learning policy bureau (2001)
2. Public Enlightenment and the provision of information.
 - National lifelong Learning Festivals
 - Information through internet and other means
3. Expansion of learning opportunities.
 - Social education
 - University of Air;
 - ELNET Open College
4. Evaluation and Utilization of learning achievements
 - Proficiency tests evaluation of out of school learning

Sri Lanka

Sri Lanka has embarked on a programme under the title Education for knowledge Society Project with the following vision and mission.

Vision: Improved quality, relevance, effectiveness and equity of access to secondary and tertiary education which will lead to increased employability of educated youth.

Mission

To ensure establishing a nationwide resource base irrespective of gender, ethnicity and geographical location, for improved access to secondary and tertiary education.

The project was not only concerned about enhancing access to education but also gave importance to improving the quality of education.

To successfully meet the objectives, the project concentrated on capacity in the following fields: ICT, English Language, Mathematics, Environmental science, performance standards, education – management, education leadership and career guidance. Improvements in these areas were considered important in Sri Lanka’s march towards knowledge society. Several measures were introduced to enhance the quality of school education during the past decades such as:

- School Based Management to involve the school community and stake holders to get involved in school planning and management.
- School Based Assessment for continuous monitoring of student’s progress.
- School Based Teacher Development programmes to enhance professionalism among teachers.
- Strengthening teaching of English language.
- Introduction of projects in schools to promote “learning to learn”.
- Teaching a second national language to promote social cohesion.
- Introduction bilingual education to teach at least five subjects in English medium as an optional medium.
- Introduction of English as a subject for GCE Advanced Level students.
- Introduction of Common General paper for GCE Advance Level students.
- Revision of school curriculum with reference to that of selected countries.
- Introduction of Technology stream at GCE A Level classes.
- Establishing computer laboratories in schools to promote computer literacy.
- Revision of teacher education curriculum.
- Teaching soft skills to teachers in service.
- Encouraging school teachers to engage in undergraduate and postgraduate studies to make teaching an ‘all graduate service’.
- Introduction of pre-service teacher education through Colleges of Education and recognizing the B.Ed degree programmes conducted by the universities.

Sri Lanka was able to fulfill almost forty percent of what was expected from a developing knowledge economy as a result of Kannangara reforms and measures to enhance the quality of school education in recent decades as listed above. The knowledge economy index (KEI) is calculated by the world Bank gives this indication.

Knowledge Economy Index (KEI)

At this point it is appropriate to deal with some aspect of KEI as it is an indicator of the development of knowledge economy in any country. It is prepared by the World Bank as an aggregate index representing the country’s overall preparedness to compete in the knowledge economy.

KEI is based on a simple average of four sub indices, which represent the four pillars of knowledge economy explained earlier (Economic incentives, Innovation, Education and training and ICT infrastructures). Out of these four pillars, the pillar of education refers to an educated and appropriately trained population which is capable of creating, sharing and using knowledge. The pillar of education and skill of the population includes adult literacy rates, gross secondary enrollment rates and gross tertiary enrollment rates.

In the performance score ranging from 0(= lowest) to 10 (= highest) the KEI score for Sri Lanka is only 3.63 and lags behind most of the countries of Asia such as Malaysia, Thailand, Philippines, China and Kazakhstan (2012). Our world ranking is 101 and a little above this countries like Vietnam, Indonesia, India, Pakistan and Bangladesh. As for education index, the performance of Sri Lanka is far better than the above countries but lower than that of Malaysia and Philippines (see Table below).

Table No.07: Knowledge Economy Index for Asian Countries - Recent and 2000

Rank (2013)	Country	KEI		Education	
		Recent	2000	Recent	2013
	Malaysia	6.1	6.37	5.22	48
	Thailand	5.21	5.47	4.23	66
	Kazakhstan	5.04	4.58	6.91	73
	China (PR)	4.37	3.83	3.93	84
	Philippines	3.94	4.59	5.35	92
	Sri Lanka	3.63	4.3	4.61	101
	Vietnam	3.04	2.72	2.99	104
	Indonesia	3.11	3.02	3.02	108
	India	3.06	3.14	2.26	110
	Pakistan	2.45	2.12	1.44	117
	Bangladesh	1.49	1.77	1.75	137

Source: World Bank data 2012

She lags behind Malaysia and Philippines.

As expected advanced countries in the west and Asia have performance very well in both these indicators (KEI and Education (See Table below).

Table No 08: KEI and Education in selected Advanced Countries

Country	KEI	Education
Denmark	9.58	9.80
Sweden	9.52	9.40
Finland	9.37	9.78
Norway	9.27	9.60
Canada	9.21	9.26
U.K.	9.08	8.77
Australia	9.05	9.6
Germany	8.87	8.46
Japan	8.56	8.71
Singapore	8.24	5.19
South Korea	7.68	7.97

Source: Wikipedia

According to World Bank data on KEI the average KEI score for the Asia Pacific region was 4.39, compared with 8.25 in the case of advanced Countries in the West. Surprisingly, India is ranked 110th among 145 countries with a score of 3.06. What is interesting is that among four pillars, India's high ranking is in the area of innovation in view of several examples of low – cost innovative techniques that have emerged in India. Even though India is well known for IT out sourcing, its own use of IT is far behind that of developed economies. Weak primary education with high drop – out rates and high rates of child labour are some of the reasons for India's backwardness in this respect. A lot more to be done by the government to facilitate the transition to knowledge -based- economy.

Possibilities, Challenges and Way Forward

Asian economies are at an advantage because of their demographics and youthful population. A growing middle class, an expanding middle class, an expanding services sector and creative industries to move forward and surpass the advanced countries and they can take the lead in the knowledge based economy in the future: For Peter Drucker, the dominant factors for development for these decades is not going to be economics or technology. It will be demographics. His prediction is that the issue is not overpopulation/ and there will be no single dominant world economic power, because no developed country has the population base to support such a role (Peter Drucker, 1998)

While some countries like Japan, Singapore and South Korea are surging ahead, developing countries in Asia including Sri Lanka will need to invest more in school education and higher education and training, innovation and IT if the region has to catch up with the economies of the West.

The Sri Lankan government needs, overtime to increase public investment in education. In order to invest adequate resources in modern equipment and technology and enable Sri Lankan students to acquire skill and competencies needed for knowledge based economy, the country need to increase investment in education. According to the World Bank there are multiple options to increase resources available for general education sector. The World Bank has suggested encouraging public private partnership using the present assisted schools funded by the government as a model. This would enable the government to increase resources for schools attended by poorer children. An alternative model is for schools to tap into funds available from private firms under corporate social Responsibility schemes. (World Bank, 2011)

Sri Lanka's performance in achieving higher enrollment ratios in school education is noteworthy. But the gaps caused by students from disadvantaged groups have to be looked into. A sizable amount of resources from the 6 percent allocation of the GNP in the future could be utilized for this purpose. Non – formal division could be transformed into lifelong learning divisions to meet the challenges posed by these children. A focus on lifelong learning system will determine the country's capacity to embrace the benefits of knowledge economy.

Sri Lanka's efforts have been primarily concentrated on democratization of education, basic and secondary education, thanks to the efforts of Dr. Kannangara. These efforts contributed to the development of a network of schools covering rural and plantation areas and a system of education in place without any ethnic or linguistic differences. Tamil was made a medium of instruction up to University levels along with Sinhala Language. However, literacy and high enrollment ratios will no longer suffice in the knowledge based century. The Sri Lankan education sector should effectively provide the school leavers with the skills necessary for the emerging knowledge economy which requires ICT competencies, information skills or information literacy to identify, classify and use information, a new set of soft skills including creativity, leadership, teamwork, problem solving, communication and English language skills.

In order to participate successfully in the knowledge economy, the country will have to increase quality input such as IT access, constructive teaching, better mathematics and science education. All content and skills necessary to orient education system to the world of work should be incorporated into the curriculum along with learning to learn concept.

While preparing the students to local labour market, needs of the international labour market also should receive attention. Our students will have to compete in the international labour market with students from countries such as India and Malaysia. In this context, skills necessary to participate in the advanced and upper middle level economies such as expert thinking which requires creative solutions to complex problems and complex communication skills have become important.

English is considered as the global business language and in order for Sri Lanka to participate effectively in the knowledge economy; there is a need to recognize its importance as a determinant of future growth. Nowadays, English is considered to be the most important skill requirement, yet also one of the country's shortfalls. For opening up of the Business Process Outsourcing (BPO) sector the supply of English speaking workers has become a bottleneck. English language teachers and facilities are limited to urban areas and their writing skills are very minimal.

Tertiary Education

Tertiary education sector has been facing issues pertaining to enrollment and quality of education. Public universities normally enroll a maximum of 4% of the relevant age group. At 11.0 percent, Sri Lankan Tertiary enrolment rate is comparable to the South Asian averages. There is a variety of private institutions conducting courses in a variety of professions and they are mostly affiliated to universities abroad. Their enrolment statistics are not properly documented. In recent times, it was noted that the enrolment at state universities has been dropping as students fail to see any benefits in pursuing higher studies. In addition, it has been found that investing in higher education actually generates a lower rate of return compared to those who finish only secondary education. The subject 'knowledge economy and higher education' deserves a separate and very detail discussion and analysis as the performance of higher education is very crucial for the growth of knowledge economy in terms of assimilation, dissemination and creation of new knowledge.

All European countries and East Asian countries like China, Japan and Korea are now engaged in establishing and transforming their universities into ‘world class universities’ to become competitive in the globalized world. Several countries and institutes are having programmes to rank all the universities in the world using their own criteria. It was China which first started this exercise and came out with league tables identifying the world class universities.

To emerge as a global leader all Asian countries including Sri Lanka, India and China need a critical mass of world standard tertiary education institutions.

This can be built by:

- Upgrading existing institutions
- Partnering with world class Universities, a combination.
- Forging linkage with world class Universities.
- Starting research and development programmes that are benchmarked global standards.
- Establishing best practices in governance of tertiary education system.
- Greater focusing on science, technology and engineering and mathematical disciplines.
- Establishing and expansion of centers of excellence in R&D.

The problems that confront higher education today are low rate of enrollment, unequal access, poor infrastructure and lack of relevance. In Sri Lanka enrollment rate is sometimes calculated using the numbers registered for external degree programmes conducted by various state universities. That number is always very much more than the total number of internal students enrolled in the state university system. Nowadays several local institutions are conducting courses of foreign universities and we do not know the number of such institutions and the number enrolled. Thousands of students are going abroad for higher education to obtain foreign degrees with the idea of staying back. If we take only the number enrolled in the state universities the enrollment rate would be very low (around 4%). This might not give the correct enrollment rate because there is a multiplicity of institutions engaged in providing courses. In other words we do not have accurate statistics pertaining to this aspect of higher education. In spite of recent increases in the intake of the state university system it is obvious that the system is incapable of accommodating a large number of students (around 115000) who are declared by the University Grants Commission that they are qualified for university admission. We have a kind of ‘hands off’ policy towards them. It is evident that most of them are from disadvantaged communities and not in a position to seek places in private institutions of higher education. Of course there are other avenues such as Open University, external degree programmes and university of vocational technology, all state sector institutions.

As a result of proliferation of fee-levying private institutions, unequal opportunities have developed unequal human capabilities and converting higher education into an instrument to further economic inequalities which is detrimental to the success of building knowledge economy. While the inevitability of promoting private higher education is understandable it should not lead to inequity

in educational opportunities. Indian suggestion is to extend ‘poor friendly’ financial assistance by setting up a government financial organization, based on the model in Canada and Australia. While ‘Mahapola’ and bursaries are helping state university students this kind of arrangement would help students seeking admission to private institutions. At present we lack financial assistance to these students.

It is regrettable that the proposal to allow foreign universities to establish campuses in Sri Lanka has not yet finalized no legislative arrangements are made to implement the proposal. This is one way of creating more opportunities for higher education. This will also help to promote international collaboration which will help to enhance the quality of higher education and it will have some impact on the quality of education provided by the state universities as well. Obviously this proposal will be supported by the elite who look for foreign education, this is countered by some who reasonably argue that the presence of a few quality institutions of foreign origin is hardly a solution as far as the majority of rural and poor students are concerned. One alternative suggested is to allow foreign institutions to enter into collaborations with Sri Lankan institutions on a large scale. In turn this will be in enhancing capabilities as far as curricular and pedagogical practices, and student-staff exchanges.

There is thinking among higher education policy makers to assist a selected number of Sri Lankan universities to develop as world class universities. This is a universal trend and in the Asian region countries such as China, India, Japan and Korea are in the forefront in this matter. The international bodies such as Shanghai Jiao Tong university, Australian University and British Times journal engaged in ranking the universities world over insist of several criteria, some of which are given below:

- Quality research of international standards; presence of Nobel prize winners in the universities;
- High percentage of international students and faculty;
- Employability of graduates;
- Admission criteria and financial allocation to universities.

A careful study of these criteria would give some guidelines in the reorganization of our higher education system which would help to meet the requirements of the knowledge economy.

Lessons from Other Countries

To understand how to build knowledge – based economies, it is useful to look at countries that have succeeded in setting their growth processes. The experiences of these countries inform answers to the questions what to do to build a knowledge economy and how to do it.

South Korea

- Throughout its economic development, Korea invested heavily on education, starting from a relatively high level of literacy in the 1950 s. Its initial priority was basic education, but professional and vocational education gradually received attention.
- Korea's most significant development attribute was its ability to develop its skill and innovation base. Government played a major role in effectively making a transition from a regulator to that of an architect in guiding the country by taking a less interventionist policies.
- Korea invested heavily on R & D after it had built up the knowledge capacity that it received from assimilation and imitation of technologies inherited from the global community.
- In the education system, Korea encouraged the private sector to finance a large portion of primary and secondary levels, leaving the government to focus its investment on higher education (World Bank, 2007)

China

- What Sri Lanka can learn from China is that a history of having a closed economy is difficult to overcome, and integrating into the global community will take much more time.
- China is facing great challenges in moving towards a more knowledge based economy because it maintain & a relatively stringent political regime. Sri Lanka having one of the most liberal economies in South Asia will not have so many challenges in developing a domestic innovation system.
- China needs to reduce inequalities in access to education. To solve this, the government intends to increase funding, while improving transparency and accountability to its use.
- Compulsory education is to be extended from 9 years to 12 years.
- China is boasting its university systems by focusing on 100 elite establishments to develop them as world class Universities. She is also trying to improve curricula, pedagogy, and governance.
- A serious attempt has been made to establish an effective lifelong learning system to tackle the issues of low educational attainment, transition to market economy and fragmented system of education and training.

India

- India has a strong base of innovative capability, a large pool of global and national enterprises, a vibrant democratic base, a large English speaking population, a rapidly mounting middle class with a relatively well developed market, a relatively young population.
- India possesses a large pool of highly educated and vocationally qualified people who are making their mark in science, engineering and information technology but they make up a small fraction of the population.

- In higher education, there are many world-class institutions and the central Government has plans to establish at least one new World class university in every state. Highly talented Indian professionals are sought by countries like the USA. Their annual remittances are an important factor in capital formation in India. The government has recently backed 100 percent Foreign Direct Investment in higher education in India.
- The Indian government also took steps to appoint the National Knowledge Commission (NKC), a high level advisory body to the Prime Minister of India with the objective of transforming India into a knowledge society. In its attempt to fulfill this objective the commission submitted around 300 recommendations on 27 focus areas during its three and a half year term since its appointment in 2005.
- In the words of the then Prime Minister Dr. Manmohan Singh “the time has come to create a second wave of institution building and excellence in education, science and research so that we are better prepared for the 21st century’. India was getting ready to face the challenges, needs and situations of the 21st century and the policy makers were fully aware of them.
- The NKC was given a mandate to guide and direct reforms focusing on certain key areas such as education, science and technology, e-governance etc. Easy access to knowledge, creation and preservation of knowledge systems and dissemination of knowledge, that are main characteristics of knowledge economy were the core concerns of the NKC.

Singapore

- There is an important lesson to learn from Singapore. In Asia it has developed highly advanced economy with a very high per-capita income similar to any advanced country. English is widely used in business and education. But Singapore is very emphatic about its bilingual policy requiring all ethnic groups (Chinese, Malay and Tamil) to learn their mother tongue. Their languages are mother tongue languages. The policy is that using only English and allow our mother tongue to degenerate, we will, in time, lose our values and cultural heritage: The nature of our Society will change for worse, (Wendy D. Bokhorst – Heng, 2007).
- Prime Minister of Singapore once said English language enables us to plug into the global grid and access the latest science, technology and fashion. But mother tongue helps us access ... our roots, culture and identity... Our Asian heritage and values give us confidence in ourselves (Quoted in *ibid*). English is for business and mother tongue for values and identity and this principle is the cornerstone of Singapore’s bilingual policy.
- Our policy makers who promote IT, Science and English education in their enthusiasm towards knowledge economy should take cognizance of this Singapore experience.
- Singapore recognized that it needed to develop a powerful innovation sector in order to remain competitive in the knowledge economy. The country moved quickly to address the issues of four pillars and brought in international experiences and funding wherever possible.

Sri Lanka could acquire some of these strategies in its development by encouraging a culture of innovation in the education system and industries.

- Using Singapore as a model Sri Lanka could **move** effort to create strong research communities on a smaller scale and encouraging researchers to interact with each other for mutual benefit.

Finland

- Equality by gender, region and socio – economic background are fundamental principles of Finnish education policy. Previously equality was considered on a quantitative basis an access to schools was the main measure of equality. Nowadays, equality in the quality of education for everyone is the goal, and individual learning results are the measures of interest.
- The social security system exerts strong incentives for young people to continue educating since one has to be over 18 to be eligible for unemployment benefits.
- Higher education reforms aim at shortening the years of study and to improve employment rate by faster transition to the labour market.
- The Finnish students (15+) scored the highest in reading literacy skills, and scored among top five countries in science and maths in International tests (Programme for International Student Assessment (PISA). The effect of students' socio – economic backgrounds on performance was smallest in Finland.
- Equality of Opportunity in education has been offered as the explanation for the success of Finnish students.
- Children attend schools at the age of seven. 97 percent of them attend pre- schools where the emphasis is on playing and socializing
- There are few mandatory tests until a single exam at the end of secondary school. There is also little homework. Tests are not necessary as teachers no more about their students than these tests can tell.
- Average class size is 20. there is no tracking or separation of students based on ability. They are all taught in the same class.

Conclusion

In my presentation, I have tried to argue that the social policies of Dr. Kannangara who was a social engineer Par Excellence laid the foundation for democratization of education which paved the way for establishing a knowledge economy in Sri Lanka in view of enhanced literacy rates and school enrollment rates realized in the latter part of the 20th century. Since one of the basic requirements of knowledge economy was mass and quality school education and higher education. Dr. Kannangaras' attempts to introduce free education and mother tongue as medium of instruction contributed enormously to meet this requirement even without any knowledge of knowledge economy on the part of Dr. Kannangara in 1940s. This could be interpreted as a prophecy or a vision

he held during the 1940s in respect of future development of the country even under the foreign rule. It is also interesting but with sorrow to note that some of the well recognized national leaders of the country tried very hard to delay the reforms by placing various obstacles and utilizing delaying tactics since they were obviously concerned about their class interests. Their narrow criticisms were thwarted by Dr. Kannangaras' eloquence and his concern for subaltern people of this country.

It should be mentioned that he did not think in terms of ethnicity or class discrimination when he formulated his policies. He refused to accept the argument that students from affluent classes did not need free education and he argued that he was against creating two classes of students in the school system, one receiving free education and another paying for their education. He established Central Schools in the North and East too and made Tamil language as medium of instruction for all Tamil speaking students along with Sinhala and made free education available for all students.

It was his view that mother tongue was the natural medium of instruction and he wanted to eradicate the colonial school system which was compartmentalized giving several advantages for students who studied in the English medium. He was against a system based on two media of instruction and overtime he succeeded in establishing a system based on mother tongue as medium of instruction which became a cornerstone of a national system of education in Sri Lanka. In fact he helped the subsequent policy makers by facilitating the process of developing a national system of education during the post independent era. It is noteworthy that the successive governments continued to support the Kannangara policies without making any distortions in the free education scheme or teaching in the mother tongue and went further to strengthen free education by introducing schemes to provide free textbooks, free school uniforms and Mahapola scholarships to university students.

The introduction of bilingual policy after 2000 recognized the fact that teaching some subjects in the mother tongue is a requirement and the policy is implemented only in few schools having adequate resources and as an optional medium. Even with the introduction of fee-levying international schools which admit local students did not prevent around four million children attending state schools where free education is available. In my view that every attempt should be made to enhance access to government schools by paying attention to the quality of education provided by them in order to attract a section of the public who seek private education. It is a negative development that these international schools are functioning outside the national system of education without any supervision or monitoring by education authorities creating a new post-colonial duality in education already eradicated by Dr. Kannangara. Characteristics necessary to integrate the local students with local culture, language and history should be incorporated into their foreign curriculum which prepares them to live in a faraway foreign culture.

The Sri Lankan policy makers have to give priority to the disadvantaged groups not enrolled in the system as identified in my speech and make decisions or develop an emergency plan to accommodate them in the formal school or organize non- formal courses using the existing

structures. We cannot afford to leave behind several groups of students (such as street children, displaced children, plantation children, slum children etc) without education and move forward towards knowledge economy and create a situation to promote the phenomena of ‘digital divide’.

In the Indian context it was Mahatma Gandhi and Rabindranath Tagore who were in the forefront to formulate education policies suitable to rural India as against the Lord Macaulay’s dictum to establish a colonial system of education to produce a class of Indians to be Indians in their colour and blood but British in their thinking, tastes and patterns of behaviour. They were functioning and thinking outside the official colonial policy and helped immensely to formulate a homemade system of education with indigenous touch. In the Sri Lankan context it was Dr. Kannangara who ventured into the same pattern of thinking to provide an alternative scheme of education with free education and rural system of education (Handessa Scheme) suitable for predominant rural Sri Lanka.

Moreover, Dr. Kannangara’s policies helped and facilitated the work of the governments of post Independent Sri Lanka in respect of establishing a national system of education and the national leadership was encouraged by his policies to embark on a reform agenda to lay further foundations for the transformation of education with an emphasis on equity and equality.

As for knowledge economy and education in Sri Lanka I wish to limit my concluding remarks to a few points. A study of education policy documents put forward by policy making authorities in recent times reveal that reorienting school education to fulfill the requirements of a knowledge economy or strengthening the pillar of education vis-a-vis knowledge economy did not appear to be in the agenda of policy makers. The term knowledge economy and education rarely appears in these documents.

The guiding principles of education suggested in these documents are devoid of this economic reality and there is a need to transform education in conjunction with a futurological perspective in relation to knowledge economy. I think the policy making bodies should take this into consideration and make the requirements of knowledge economy as a guiding principle for future education reforms. An example is the Education for Knowledge Society Project which does not talk much about its concept of knowledge society as if it is very familiar to all.

In spite of the above comment it should be mentioned that since 1980s the education policy makers gave priority to enhancing the quality of education and turned away from emphasizing equity and equality of opportunities in education or at least soft pedaling on that matter. The reforms pertaining to enhancing the quality of education were actually reinforced education to serve the cause of knowledge economy although it is not explicitly stated in policy documents. The example of Indian Knowledge Commission which made 300 recommendations for the education sector is worth mentioning here.

Successful march towards knowledge economy requires coordination among ministries and institutions dealing with four pillar framework and needs direct intervention by the government for overall policy guidance. There is also a need to make a continuous assessment of the progress of

four pillar framework based on the criteria developed by the World Bank. Otherwise we are deliberately leaving this exercise in the hands of powerful international agencies to do the scrutiny of the progress of Sri Lankan knowledge economy.

In the present context of successful bottom-up planning approach which is more democratic and participatory in nature and advocated by development planning experts, avenues have to be found to make awareness of the concept of knowledge economy among the public using media, public forums and all non-formal education programmes. They cannot be kept in the dark while their country is moving towards a paradigm shift in the economy and education. When the industrial revolution took place in the Western Europe they were just onlookers or mere observers and the benefits were not enjoyed by them in terms of employment, living standards or capital formation as a result of that revolution. Now when a knowledge revolution or a digital revolution is taking place throughout the globe as a result of exponential growth of knowledge in the 21st century and speed that knowledge is disseminated, the Sri Lankans should also become participants and beneficiaries of the knowledge revolution by becoming efficient and effective members of the Sri Lankan knowledge society. Apart from the educational institutions all organizations, families, workplaces, and community structures should endeavor to become learning organizations and participate in the knowledge updating processes. All people become lifelong learners and knowledge seekers to contribute towards the promotion of knowledge economy.

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About the Author

Prof. S.Sandarasegaram retired from the university service in 2007 after serving as a senior lecturer, associate professor and dean of the faculty of education, University of Colombo.

He entered the University of Ceylon, Peradeniya in 1963 and graduated in 1967 with an honours degree in education. After working as a school teacher and training college lecturer for a couple of years he joined the Colombo University as an assistant lecturer in 1975. He proceeded to the Hiroshima University, Japan on Japanese Government scholarship in 1977 and obtained M.Ed degree specializing in higher education systems. On his return he was promoted to the post of senior lecturer in education and continued to work until his retirement.

He was invited by both Auburn University, Alabama, USA and Hiroshima University as visiting professor during his sabbatical leave in 1998 and 2009 respectively. He has also participated in several international seminars held in Norway, Japan, New Delhi and South Korea where he presented papers on various education themes during the period of (1998 – 2007).

Prof. Sandarasegaram has served as a member of National Education Commission, Council of the NIE, National Library Board and Official Languages Commission. He was also a consultant on education leadership to the Knowledge Society Project Asian Development Bank (2012). He has worked as a team leader for research projects launched by the NEREC of the Faculty of Education, University of Colombo.

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