JAFFNA SCIENCE ASSOCIATION
யாழ்ப்பாண விஞ்ஞான சங்கம்
செய்தி இதழ்
JSA
NEWSLETTER
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Editorial

Tertiary Education

Education and the knowledge aquired thereby pave the way for the development and progress of mankind. Sri Lanka is fortunate, as regards its Education system which is built on the strong foundation laid, mainly by the Christian missionaries during colonial rule. This system of education has contributed to the literacy rate of 92% in our country, being one among the high ranking countries in Asia and the leading one in South Asia.

The primary and secondary education system is on par with that of developed countries and caters to 95% of the population ,this being the enrolment rate in primary schooling in our country. These two stages have been evaluated periodically since independence and beneficial changes in curriculum have been effected relevant to the present need of the country and global trends.

The last phase of secondary education is the G.C.E. A/L. The examination conducted at this stage is the stepping stone to tertiary education. Of the student population appearing for this examination only about 2% gain entrance to Universities to follow higher education while 3% are absorbed by other tertiary education institutions. The balance 95% are left behind with no hope of further education. The method of selection for University education filters out many talented and aspiring young students who face a bleak future with no hope for progress. This situation highlights the necessity for reorganizing the tertiary education system.

Tertiary education must be expanded and diversified to suit national demands and global trends. The state with its limited resources cannot fulfil this demand and so private sector participation and involvement is necessary. Higher education, universally is undergoing changes to accommodate the new technological developments which contribute to the present economic boom. In planning tertiary education, emphasis must be placed on multi-disciplinary fields of current importance. Information technology, Bio technology, Environmental technology and space technology are some of the emerging new fields with a high potential.

The definition of literacy as the ability to read and write is no more valid. Literacy is redefined as IT literacy in the present context. Sri Lanka needs to convert its young generation to It literacy. This objective could be achieved by developing tertiary education on a scientific and technological basis with the assistance of the non governmental sector. Technology based tertiary education will also provide the basis for self employment ventures, thereby curbing unemployment problem to some extent. Though the Govt loosens its regina regarding tertiary education, a quality assurance system must be firmly adhered, to prevent sub-standard conditions in tertiary education institutions.

Industrialized countries spend 5% of GDP on Education while in Sri Lanka the expenditure is 2.8% of which only 0.4% is devoted to tertiary education. A developing country like Sri Lanka cannot provide adequate funds for over-all development of tertiary education and non -governmental sector participation would alleviate this condition.

Research and higher education institutions must establish linkages with renowned institutions in the world in order to exchange knowledge and skills. Political commitment at the highest level is necessary to plan, formulate and implement any scheme of national interest successfully and tertiary education is no exception to this statement.

"JSA Theme of the Year (2003/2004) Challenges in Secondary and Tertiary Education"

Message from the president

Message

The Jaffna Science Association (JSA) was established to promote scientific awareness among the people in the Jaffna Peninsula. During the last twelve years the Association has done valuable service to this region by disseminating scientific knowledge, implanting scientific enquiry in the minds of young secondary school students and encouraging research among the scholars.

The Association achieves its goals through popular lectures, seminars. annual scientific sessions, knowledge - based programmes and school science programmes.

The theme for the 2004 sessions is 'Challenges in Tertiary Education' The literacy rate in Sri Lanka is about ninety two percent. This is attributed to the free primary and secondary education provided by more than ten thousand schools in the Island. But the number of students admitted to the universities is almost stagnant and is around ten thousand. The Annual sessions of the JSA in April 2004 will focus its attention on the ways and means of improving the opportunity and relevance of Tertiary Education in Sri Lanka.

The activities of the JSA are made known to its members and the general public, especially the secondary school and university teachers and students through the publication o f Newsletters.

It gives me great pleasure to send this message to the first Newsletter of the year 2004. I congratulate the editor for releasing the Newsletter. I also take this opportunity to thank the members of the Executive Committee and the Sectional Committees and all those associated with the activities of the JSA.

Prof.R.Kumaravadivel,
President - JSA

Office of the Dean,
Faculty of Science,
University of Jaffna.
20 March 2004

Sectional News -

Section A

1. Popular Lectures

- Popular lecture on "Global warming : How to halt it?" was delivered by Dr. Rajaratnam Shanthini, Senior Lecturer, Department of Chemical Engineering, University of Peradeniya on 29th April 2003 .
- Popular lecture on "Particle Physics: What we know and what we don't know?" was delivered by Dr.Vincent Smith, Reader, Department of Physics, University of Bristol, U.K. on 23rd September 2003.

2. ***"Vingnanath Thulligal" in "Sangunatham" Weekly magazine***

Scientific articles are being published in the special column "Vingnanath Thulligal" in "Sangunatham" the weekly magazine of the local Tamil daily news -paper "Valampuri". More than seventy five articles have been published so far. These articles are accompanied with sponsored quiz competition. Three lucky winners are being selected weekly and awarded with cash prizes, one hundred rupees each. Various private organizations are sponsoring this quiz competition.

3. "Young Inventor Award "

A"Young Inventor Award " competition among G.C.E. (A/L) students in the region has been organized. This programme is sponsored by A.G. Sharma & Co, Colombo. Rules and regulations of the competition, title of the research project and the deadline for submission of research project report have already been informed to students.

Section C-

A talk was presented by Dr.N. Sivarajah,on "SARS" on 09-07-2003, 3.00-4.00 pm at the Lecture hall Faculty of Medicine.

Section - D

The section - D conducted the following lecturer /seminars at the Geography Hall, University of Jaffna.

1.A lecture on 'EELAM TAMIL POLITICS & ECONOMICS- SOME IDEAS' delivered by Dr. Nithiyananthan (21.05.2003)

2.A lecture on 'IMPACT OF THE IRAQ WAR ON WORLD POLITICS' by Mr. K. T. Ganeshalingam (04.06.2003)

3.Alecture on 'FUNCTIONS OF ENGLISH IN SIGN BOARDS IN JAFFNA' by Mr. Saravanabavaiyar (18.06.2003)

4. A special discussion was conducted on 23.06.2003 at the Local Government Office, Nallur with community development officers on the ENVIRONMENTAL PROBLEMS FACED BY THE JAFFNA COMMUNITY.

5. A talk delivered by Dr. S.T.B.Rajeswaran, Senior Lecturer, Department of Geography, University of Jaffna, on ***"The problems encountered by A/L students in acquiring knowledge and skills especially from surveying methods in Practical Geography"*** has been jointly arranged by ***Jaffna Science Association, Section - D and Education Department Zone - 1(Jaffna)*** on 17.01.2004 Saturday at Jaffna Hindu Ladies College.

(More than two hundred students benefitted by this programme)

New Members in 2003 / 2004

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Ms.S. Sumathy
Ms.T.Umayal
Ms.A.Nanthakumaran
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Ms. Vasanthy Shrisgantharajah

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Mr. P. Seyon

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Mr.G.Thirukkumaran - *(Asst. General Secretary)*
(Secretary of the Sub committee)
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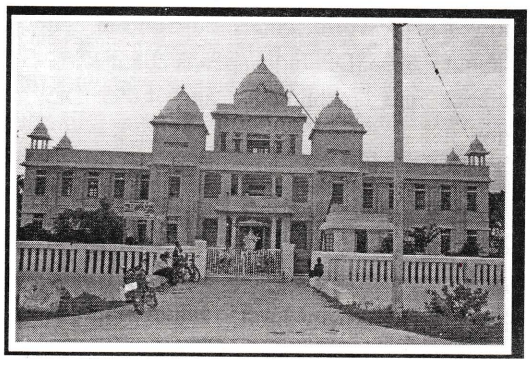
Dr. K. Ahilan-
(Coordinator for Exhibition contest)
Prof. N. Gannakumaran
(Coordinator for Oratorical contest)
Dr. (Mrs) Subanthini Ramesh -
(Coordinator for Essay contest)

Members:

Dr. A. Senthuran
Dr. A. Panchalingam
Ms. N. Ratnasabapathy
Mr. K. Suthakar



Murder

M.A.Nuhman
(Translated from Tamil
by:S.Pathmanathan)

Last night
I had a dream
Lord Buddha was shot dead
by the police-
guardians of the Law.
His body lay drenched in blood
on the step
of the Jaffna Library!

Under the cover of darkness
came the ministers.
"His name - not in our Lists!
why did you kill him"
they asked in anger.
"No, Sirs, no!"
There was no mistake.
without bumping him off
it was impossible
to harm even a fly.
There fore....
they stammered.

"Okey, okay"
Hide the corpse"
The ministers vanished.

The men in civvies
dragged the corpse.
into the Library
They heaped the books,
rare and valuable,
ninety thousand in all
They lit the pyre
with the *chikalokavada Sutta.* *

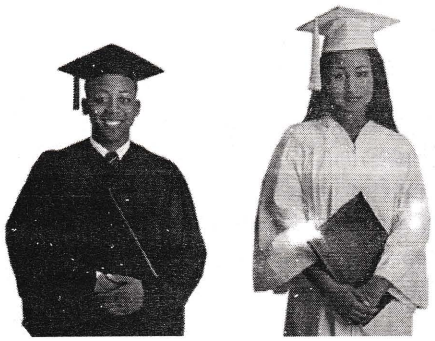
Thus the remains
Of the compassionate One
were burnt to ashes
along with the *Dhammapada.* *(1981)*

The opening of the Library has been delayed without any valid reason. Thousands of students and other users the of Public Library, Jaffna are denied access to knowledge by this delay. Therefore the Library should be opened without further delay for the benefit of the community.

* *Chikalokavada sutta, Dhammapada are Sacred Buddhist texts.*

Building a Knowledge Society in Lanka

By:Professor R.P.Gunawardane
Chairman,
National Education Commission,



Knowledge is wealth today and it has also become a weapon in the modern world. Knowledge and skills are playing an increased role in the global scenario at the present time, Thus, the knowledge, skills and resourcefulness of people are increasingly critical to the world economy today.

It is clearly seen that the whole world is moving rapidly towards a knowledge based economy with the participation of a knowledge society. This process has been accelerated in the recent past with the new developments particularly in the field of Information and Communications Technology (ICT)

Developing countries like Sri Lanka will have no alternative but to follow suit and join the bandwagon to avoid isolation and stagnation. It is necessary for us to move forward with the rest of the world. However, it should be realized that the existence of a Knowledge society is a prerequisite for the development of a knowledge-based economy in any country.

Thus, it is clear that in order to develop a knowledge based economy in Sri Lanka, it is necessary to build- up a knowledge society. It is obvious that in a knowledge society highest priority should be given to education , HRD, with special attention to science and technology, and research and development. In such a society professionals such as engineers, scientists and technologists will have a tremendous role to play.

Knowledge society and knowledge - based economy are key words today among the leaders. Most leaders and decision makers in the developing world, including Sri Lanka emphasize the importance of a knowledge society, but unfortunately they have failed to address the crucial and fundamental issues governing a knowledge society and Knowledge - based economy.

Knowledge society

In order to promote and sustain a knowledge society, there should be a commitment at the highest levels to give utmost priority to Education, Science and Technology (ES&T) and to facilitate and promote Research and Development (R&D).

While we deliberate on a knowledge-based society with scientific literacy and IT literate masses, it is disheartening to note that about 40% of our people in Sri Lanka have no access to electricity. It is even more shocking to report that about 44% of our schools in Srilanka do not have electricity. Telephone connections are not available in 86% of the Sri Lankan schools. As a result, most of our young generation have no access to modern communication facilities including access to internet. This situation has to be rectified urgently and on a priority basis in order to build a knowledge society in Sri Lanka.

In the developing world, are we moving in the right direction to establish a knowledge-besed economy? Yes, some developing nations have recognized the trend and are working relentlessly towards achieving the 'real' knowledge-based economy. Where are we (Sri Lanka) in this context?

The most important index of the emphasis of Education and Science and Technology in a country is the funding provided by the state for Education and Science and Technology or R and D.Industrialised countries (USA, Germany, UK, Japan, South Korea) spend about 5.0% GDP on education, while in Sri Lanka we spend about 2.8%, of which only 0.4% GDP is devoted to higher education, Similarly, for Science and Technology Sri Lanka spends less than 0.2% GDP - one of the lowest in the world, while industrialised countries spend about 2.5% GDP. India spends about 1.0% GDP for Science and Technology, and 4.0% GDP on education.

If we are really interested in developing a true knowledge - based economy it is essential that Sri Lanka increase its expenditure on education and science and technology to a reasonable level to achieve this goal.

Connected with this issue is the expansion and diversification of tertiary education with particular attention to science and technological disciplines to produce a critical mass of the knowledge society.

S and T education

Sri Lanka 's literacy rate is 92%, one of the highest in Asia, and we are leading in South Asia in literacy. However the old definition of literacy as the ability to read and write, is no longer valid today. Literacy is redefined as scientific/IT literacy. In a knowledge society with a knowledge - based economy it is essential to provide the 'newly defined' literacy to our masses.

Although our literacy rate is 92% and our enrolment in primary schooling is over 95%, only about 2% of the relevant age cohort is enrolled in the state university system. Altogether about 5% of the relevant age cohort is presently enrolled in tertiary education . How can we develop and sustain a knowledge based economy in Sri Lanka under these circumstances?

Then, we come to the question of expansion and diversification of our tertiary education system to satisfy the ever increasing demand for tertiary education particularly in demanding fields. In a developing country resources that can be allocated for HRD are limited. As such, no government can provide sufficient resources to expand the tertiary education system to satisfy the ever increasing demand.

University and non-university tertiary education should not be a monopoly of the state and it should be opened up to the non-governmental sector with an accreditation and quality assurance mechanism. This will certainly facilitate expansion and diversification while an element of competition also will be introduced into the sector. It is necessary to implement a scheme with state as well as non - state sector participation to increase the enrolment in tertiary education from the present 5% level to at least 25% in order to sustain a knowledge-based economy in Sri Lanka.

In building a knowledge -based society in Sri Lanka, it is possible to learn much from the newly industrialised nations such as South Korea and Malaysia. Initially, South Korea had the Japanese example as a model to follow, Malaysia to a certain extent had the Singapore model to follow. Mainland China is emerging fast as a Giant knowledge - based Economy, possibly with some influence from Hong - Kong and Taiwan.

Korean experience

South Korea spends 5% GDP on education and nearly 3.0% on science & technology. It is interesting to note that South Korea spends more than USA on S&T, as a percentage GDP. In its initial stages South Korea gave the highest priority to HRD in S&T and established high level science & technology institutions such as KIST (1966), KAIST (1971), KIT (1985), POSTECH (1986), KIAS (1996) to train manpower in demanding fields.

South Korea also promoted young highly qualified science & technology personnel, mostly with PhD's to move into new technology ventures / businesses, building up another class of entrepreneurs known as technopreneurs. Potential technopreneures were provided with access to industrial incubators with a package of incentives including substantial financial support and credit facilities. All these initiatives have paid rich dividends in South Korea.

India is also developing fast in these frontiers particularly in ICT. Although impact is not clearly visible due to the large size of the country and regional disparity in development, tremendous progress in this direction can be seen in certain regions such as Andra Pradesh, Kerala, Karnataka, Tamil Nadu, Sri Lanka needs to learn much from the experiences of Korea, Malaysia and India in this direction.

Then, what is the role of the institutions in transforming our 'traditional literate' society to a knowledge society and in promoting a knowledge - based economy?

Three important groups of partners are needed to sustain a knowledge society and a knowledge - based economy. They are (i) Knowledge generators (ii) Knowledge disseminators, and (iii) Knowledge users. Higher educational institutions and research organizations are involved in generation of knowledge and innovation, and dissemination of knowledge while users are the industry in a knowledge - based economy.

The higher education institutions and research organizations have a tremendous role to play towards establishing and sustaining a knowledge society. They need to expand and diversify their activities to cater to the demand. At the same time they should improve the quality and relevance of their programmes to suit national needs in conformity with global trends.

Higher education all over the world is undergoing changes to accommodate the needs of the emerging

knowledge - based economy. Science, Technology and Engineering education, in particular need changes and reorientation to satisfy current and future needs. In this scenario novel interdisciplinary fields are emerging fast, which are mostly market oriented.

Developing countries like Sri Lanka also should join the bandwagon and place emphasis on these multi - disciplinary fields of current importance. Some of the emerging and fast developing new fields of great importance and enormous potential with cutting - edge technology are five T's: IT,BT,NT/MT, ST and ET

(i) Information technology
(ii) Biotechnology (BT)
(iii) Nanotechnology (NT)
Materials Technology(MT)
(iv) Space Technology (ST) and
(v) Environmental Technology (ET)

It is predicted that the advancement of the IT, BT and MT will change the whole world by the year 2015.

Thus, these technologies are extremely important and relevant to developing countries like Sri Lanka. There are also novel combinations of these technologies. particularly, ICT embedded systems and novel combinations are being developed today. It is, therefore, necessary for us to move into these emerging new multi disciplinary fields of enormous potential.

ICT has been accepted as the main tool and a major driving force for economic development. To sustain such a knowledge - based economy, Sri Lanka needs IT literate population, IT professionals, IT skilled manpower. In this context HRD in IT is extremely important. Our education system - the schools and universities can play an important and dominant role in this regard.

Biotechnology is yet another field with enormous potential in a knowledge based economy. The new biotechnologies are responsible for bio - industrial revolution taking place today. Applications of biotechnologies are diverse. Some of these applications are seen in genetic engineering involving DNA, drug development , modern agriculture and food industry, clinical medicines, environmental applications, etc.

Biotechnology has also spurred growth in diagnostics, and a large number (over 600) biotechnology -based diagnostics are now available in clinical medicine. Further, in crime detection DNA finger printing is playing a significant role as a fool proof method.

It is predicted that the biotech industry will expand at least 3 fold in the next decade and will match or even surpass the computer industry in magnitude, importance and growth. Similarly, Materials Technology with its rapidly expanding branch of Nanotechnology is playing a significant role in the knowledge-based economy

Thus, it is extremely important that human resource development and research in these fields should be given utmost priority in our universities and research institutions. To facilitate this process academic and research linkages should be established with the relevant centres of excellence in the world.

In a knowledge -based economy commercialisation of research, and technology transfer and adaptation should also be facilitated and promoted in a big way. Similarly, highly skilled S and T personnel should be given all the assistance and encouragement to move into new technology ventures. It is only this way an active group of technopreneurs could be nurtured in Sri Lanka. This can be done by,

(i) recognizing the science and technology personnel as valuable resources not only for teaching and research, but also for entrepreneurship.
(ii)Expanding collaboration, promoting Industry - University - Research Institute linkages / exchanges local as well as foreign.
(iii) Establishing a National Centre for Transfer and Development of Technology (CTDT) to bridge innovation and commercialisation.
(iv)Providing adequate financial assistance, credit guarantees with easy terms to potential technopreneurs. Professional organizations are capable of playing a much wider role in a knowledge society. The IESL certainly has a vital and important role to play in establishing and sustaining a knowledge-based economy in this country.

Professional organizations like IESL certainly can promote a knowledge society through -

(i) Retraining member - ship by offering refresher courses to provide them new knowledge in their respective disciplines.
(ii)Professional training and award of professional qualifications
(iii) Promoting appropriate research and technopreneurship
(iv) Dissemination of knowledge and exchange of information.
(v) Promoting team work with scientists, technologists, planners, economists, etc, and to develop multi - disciplinary teams.

Professional organizations being non governmental and independent organizations have tremendous advantage in mobilizing expertise to contribute effectively towards building a knowledge - based economy.

In conclusion, I wish to stress that continuous political commitment at the highest level is needed to build a knowledge society in Sri Lanka. Highest priority for HRD and Science and Technology should be given by providing adequate resources. The Developing countries like Sri Lanka should have a vision, long - term plan and strategic framework with time targets to build a knowledge - based society.

This should be followed up by a well - formulated action plan by the relevant Institutions and Organizations to develop and sustain a 'Knowledge society' which will eventually nurture the Knowledge - based economy in Sri Lanka.

EDUCATION IN SRI LANKA

	1999	2000	2001	2002*
TOTAL SCHOOLS	10,694	10,615	10,552	10,505
Government School (1)	10,057	9,976	9,891	9,826
Private Schools	77	78	78	80
Pirivenas	560	561	583	599
TEACHERS	194,589	194,718	198,410	200,968
Government Schools	186,184	186,097	189,485	191,812
Private Schools	4,154	4,332	4,343	4,587
Pirivenas	4,251	4,289	4,582	4,569
PUPILS	4,277,064	4,340,447	4,337,314	4,178,375
Government Schools	4,134,082	4,193,908	4,187,146	4,026,233
Private Schools	93,325	95,383	97,262	97,174
Pirivenas	49,657	51,156	52,906	54,968
PUPIL / TEACHER RATIO				
Government Schools	22	23	22	21
Private Schools	22	22	22	21
Pirivenas	12	12	12	12
%qualifying for G.C.E.(A/L)	27.1	29.3	29.7	40.4
% qualifying to enter university	43.4	49.9	50.5	55.6
HIGHER EDUCATION				
Number of Universities	12	12	12	12
Number of University students	41,584	48,296	48,061	48,667
Number of University teachers	3,228	3,214	3,268	3,225
TERTIARY EDUCATION				
Number of Technical Colleges	36	36	36	37
Number of teachers (2)	606	612	574	558
New admissions	13,138	12,899	11,377	13,197
Total Expenditure on technical education (Rs. Mn)	521.3	414.2	413.0	443.8

(1) Functioning school only.
(2) Excluding visiting staff.

Sources: Ministry of Human Resources Development, Education and Cultural Affairs
Department of Technical Education and Training

JAFFNA SCIENCE ASSOCIATION

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Dr.N.Sivayohan
Dept of Physics,
Faculty of Science
University of Jaffna

Harikanan Printers, Jaffna. T.P: 021- 2222717