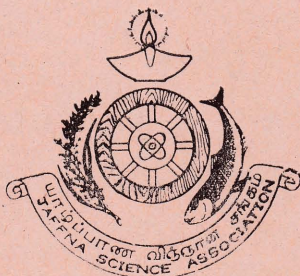


Presidential Address



PROCEEDINGS
OF
JAFFNA SCIENCE ASSOCIATION

JAFFNA, SRI LANKA

1991

GENERAL PRESIDENT'S ADDRESS

TERTIARY EDUCATION IN DEVELOPMENT

by

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It has been estimated that about one billion people i.e. one-fifth of the world population, living mostly in the developing countries, do not possess the basic requirements for survival and productive work. About 35,000 people die everyday as a result of hunger. The hungry people do not have the fundamental necessities of life such as a home, basic health care, safe drinking water, skills training, ability to read and write, and access to land, tools and credit. Hence they are unable to generate the resources they need to provide for their families. Persons who have been working with the hungry people state that what is required to end this tragic situation is not the supplying of food to these people but creating an environment of opportunity for them to do what is needed to end their own hunger. People are creative and are capable of taking initiatives for their development, but social process has often denied opportunities for them to show this in practice. Any meaningful development process must lead to the liberation of the creative initiatives of the people.

Socio-economic development of a nation involves the development of its natural resources and human resources. Education plays a leading role in the development of the human resources. It is generally accepted that a major factor for economic progress and a pre-condition for social development is education. Providing education to all requires mobilisation of vast national resources and tremendous efforts by the government, individuals and non-governmental organizations.



Science and Technology in Development

Industrial revolution brought a change in the educational system in the Western World from the medieval period. From a generalized form of education for gentlemen of leisure, education became specialized to provide professional men and skilled workers for industry, factories and research. Universities introduced facilities for research and development. Institutes of Technology and Research and Development Institutions were created. In countries advanced in science and technology, the common man is enjoying a standard of living, and social and cultural amenities which were once confined to a very small privileged minority. The use of human resources for industrialization demands its education in science and training in technical skills.

The need for developing science and technology for socio-economic development of a country is well recognised. The communique issued at the end of the Conference of Commonwealth Ministers of Science and Technology held in Malta in November 1990 contained the following statement on science and technology:

“Ministers believed that science and technology had a priority role to play in satisfying basic development needs. It was therefore, incumbent on governments to foster institutional frameworks for the effective promotion and development of science and technology through every available channel, including the provision of adequate funding, the pursuit of science education, incentives to retain educated personnel, and the establishment of mechanisms for scanning and disseminating relevant technologies”.

In the report prepared by the Commonwealth Science Council on “Science for Technology for Development”, the need for scientific research for national development is stated thus:

- (i) “one cannot expect economic or social development unless a country has some technology and innovation;

(ii) There cannot be a healthy programme of applied technological research unless there is some continuing basic research in progress as well."

However, it is found that though in both the developed countries and in developing countries, the amount spent on defence, health and education is roughly the same percentage of GNP, the amount spent by developing countries on Science and Technology is much lower. For Research and Development, developed countries spend about 2.5% of GNP while India spends about 1.1% of GNP and countries like Sri Lanka, Pakistan, Bangladesh and Thailand spend only about 0.2% of GNP.

Development of science and technology was expected to solve problems faced by society such as poverty, food and nutrition, health care and housing. But with the growth of science and technology, many other problems arose. It created greater inequality among nations. Industrial development has caused heavy pollution of land, water resources and atmosphere, seriously threatening the environment. Developed countries are mainly responsible for this and the world is now organising itself to meet this threat.

Education System

The prevailing system of education in this country consists of (i) School system which provides general education, (ii) Universities and Professional Institutes, and (iii) Technical Education and Vocational Training Institutes. Systems (ii) and (iii) above are included under Tertiary Education.

School Education System

Free education was introduced in this country in 1945. All education provided by the State, including tertiary education, is provided free of charge. The school system is grouped into Primary School education from the Year 1 to Year 6 and Secondary School education from the Year 7 to Year 13.

Let us look at some figures regarding the number of students sitting for the public examinations. For the year 1987, out of 484,797 students who sat for the G.C.E. (O.L.) Examination i.e. at the end of year 11, only 95,416 students qualified to continue their studies into year 12, 13. In the same year, 112,577 students sat the G.C.E. (A.L.) Examination, and out of this, 31,079 students qualified to enter Universities. Of those qualified, only 6,143 students were admitted to the Universities.

Though only about 1.2% of the students who commence education in Year 1 enter the Universities, it is unfortunate that the school education system has been planned with the education of this small target group as the aim. The balance 98.8% of the students are drop outs who have failed to meet their aspirations to enter Universities. Since the education imparted to them in the school system does not equip them with the basic knowledge and skills required for gainful employment the majority of school leavers find very little opportunities for employment.

Representations made to the Presidential Commission on Youth (Jayatilake Commission, 1990) have pointed out that there is something fundamentally wrong with our present system of education and urgent steps should be taken to make reforms to the system. The Jayatilake Commission report states that one of the major problems facing the country today is the mismatch between education and employment, primarily the lack of attention paid to school leavers at the secondary school level. The Commission has recommended the establishment of a National Commission on Educational Policy and the Government has taken steps to establish this Commission.

On Educational Policy, the Jayatilake Commission has this to say:

“Educational Policy should aim at imparting the following skills to children:

- (a) the training of mind, the sharpening of intellect, and increasing the awareness of students,
- (b) the development of communication skills, and the refinement of creativity,
- (c) equipping the students with skills and knowledge, so that they may pursue a vocation of their choice, given the opportunity and minimum standards,
- (d) developing personality traits so that the student becomes a self reliant, self determining individual who is able to contribute to the life of his/her community,
- (e) developing social skills so that a student may contribute to his community, develop capacity for team work, leadership and self sacrifice; in a multi-ethnic society, young people may also require sensitivity to diversity and the tolerance of different cultures;
- (f) to develop a sense of obligation to the Community.'

The Jayatilake Commission has high-lighted the major problem of lack of sufficient number of teachers to train students in vocational subjects. To meet this problem, the Commission has come out with a valuable suggestion to invite suitable practitioners of the vocation from the community to schools to teach vocational subjects. Thus carpenters, electricians, masons, tailors, plumbers, mechanics, farmers, fishermen etc. should be invited as visiting teachers to the schools.

Since independence, the school system has expanded widely and it now consists of about 10,000 schools, 4 million students and 150,000 teachers. Universities, Professional Institutes and Colleges have been established to produce professionals and higher level cadres needed by the economy. However, facilities for technical education and vocational training have not expanded adequately.

In early 1970, Ministry of Education introduced the following two programmes in the school education system to provide technical or vocational skills to students: (i) technical subjects were introduced at the Secondary School level and

(ii) vocational skills teaching was commenced to school drop outs using the workshops, laboratories and facilities available in the school system.

White Paper

In the latter part of the seventies, with a view to reform the educational system with the objective to make education more responsive and relevant to national socio-economic needs, Committees were appointed to examine the general education system, technical education, apprenticeship training and teacher training. The recommendation of these Committees were incorporated in the White Paper prepared in 1981.

In the White Paper, it has been proposed that a Tertiary Education Commission should be established for the purpose of guiding, co-ordinating, developing and supporting non-University Higher Education, and Technical and Vocational Education. Professional Colleges, providing training for established professions such as Teaching, Nursing, Surveying, Printing, Accountancy, Librarianship, Music and Dancing would come under the proposed Tertiary Education Commission. These Colleges are expected to produce persons who are equipped to make significant contributions in the areas of commerce, manufacturing industry, service sector, public service, creative arts, etc.

The White Paper also proposed the establishment of an Agricultural Education Board. Economy of Sri Lanka is mainly agricultural with 50% of the work force engaged in agriculture as an occupation. Agricultural training is mainly obtained through agricultural practices learnt from elders, fellow farmers and the extension services rather than from the formal training system. The Agricultural Education Board will develop and manage a unified education programme for agriculture including animal husbandry, horticulture and plantation crops.

Technical and Vocational Education

With the upward increase in the number of unemployed in the country after independence, it was generally felt that

the general education system had not adjusted itself to provide adequate skills to the school leavers for them to find suitable employment. A possible solution to the problem of increasing unemployment was the provision of technical education and vocational training to school leavers, and the Government gave high priority in providing these facilities.

The Ten Year Plan (1958) has this to say on the educational system :

“ Obviously the education system must now be more aggressively geared to the needs of development with greater bias to technical and scientific education. This would require greater provision for technical and practical courses in Schools (the present curriculum is unduly academic) and a larger flow of pupils into higher technical and scientific courses in specialised institutions and Universities.”

In the Five Year Plan 1972-76, it is stated: “ The basic shortcoming of the country’s educational system is that the academic type curricula are framed to cater to the needs of that small minority of the output of the educational system who having reached the G. C. E. (O.L.) compete for the very small number of jobs available as doctors, engineers, administrators or teachers. Of the others a small number obtain employment in the clerical, technical and service occupations, while the rest begin the interminable wait for the white collar jobs that are not there.”

The primary cause for the deterioration in unemployment situation was surmised to be due to the over concentration of an academic type of curricula in schools. The education system raised the aspirations of the job seekers, did not provide sufficient job skills needed for meaningful employment, and produced persons who are reluctant to do manual work.

One of the principal aims of technical and vocational education is the provision of employable skills to school leavers. The Government accepted this and went ahead expanding the facilities for technical and vocational education

from middle of fifties. A number of technical institutes were established and the capacity of training programmes offered by Government Departments on specialised subjects increased. The Government appointed a Technical Education Commission (Munasinghe Commission 1963) to report on reforms on technical and vocational education. The report submitted by the Commission formed the basis for the development of technical and vocational education for the next decade and a half.

In 1971, the National Apprenticeship Scheme was established with the objective of placing educated youth in training in various skills in industries in the public and private sectors.

The Co-ordination of technical and vocational education and training that is going on in different sectors is being carried out by the Ministry of Youth Affairs and Employment which was established in 1971. Last year, the Tertiary and Vocational Education Commission was established under the new Ministry of Youth Affairs and Sports. All institutions both in public and private sectors conducting technical and vocational education and training should register with this Commission. The Commission will coordinate all technical and vocational education activities and see that standards are maintained.

The Government appointed a Committee on Technical Education (Gnanalingam Committee 1978) to examine and review the facilities available for technical education in the country and to recommend reforms and changes necessary. The Committee recommended the strengthening of technical education facilities by establishment of new technical institutes in the districts, and upgrading some of the present technical institutes to conduct higher level technician courses. The Ministry of Higher Education has taken steps to implement these recommendations and foreign aid has been obtained from the Asian Development Bank to develop technical education.

In 1978, 18 technical institutes were functioning in this country out of which 8 were Polytechnical Institutes and 10

were Junior Technical Institutes. A wide variety of full time and part time courses are being provided by these institutes with the aim of providing useful knowledge and skills mainly in the fields of engineering and commerce to school leavers and persons in employment.

Gnanalingam Committee report states "With the decentralization of the country's administration and the emphasis on rural development, both industrial and agricultural, there will be demand for technically trained persons in all the districts of the country. We recommend that 14 additional Technical Colleges be established in different parts of the country"

As far as the North East Province is concerned, the following three Technical institutes are functioning at present: (i) Polytechnical Institute in Jaffna established in 1959, (ii) Hardy Senior Technical Institute in Amparai established in 1956 and (iii) Junior Technical Institute in Sammanthurai, established in 1974. Gnanalingam Committee had recommended the establishment of three more Technical Institutes in Vavuniya Town, Trincomalee Town and Batticaloa Town respectively.

Though additional Technical Institutes have been established in the South as recommended in Gnanalingam Report, no new Technical Institute has been established in North East Province.

Financial assistance has been obtained by the Government from the Asian Development Bank for upgrading the Technical Colleges by providing additional buildings and equipment. Though contract documents for construction of additional facilities to Jaffna Technical College are ready, work has not commenced. Equipment purchased for upgrading Jaffna Technical College was sent to upgrade another Technical College in the South.

Technical education is also being provided by two private institutions, (i) Jaffna College Institute of Technology in Vaddukoddai and (ii) Institute of Technological Studies in Colombo. The Institution of Engineers, Sri Lanka has recognised

the engineering course conducted at Jaffna College Institute of Technology as an approved course of study and students have been allowed to sit the engineering examinations conducted by the Institutions of Engineers, Sri Lanka.

The Open University of Sri Lanka is conducting a number of technician courses at Diploma and Certificate levels by distance learning methods. This has facilitated a number of employed persons to upgrade themselves through the Open University.

In the engineering trade we have craftsmen, technicians and engineers. Craftsmen are produced through vocational training for which no academic qualification is necessary but G. C. E. (O. L.) qualification is preferred. Technicians are produced through technical education and training for which G.C.E. (A.L.) qualification is necessary. Engineers are produced through professional training for which University degrees are necessary.

In most countries, the ratio of production of engineers to technicians to craftsmen is about 1:4:8. In Sri Lanka, due to the imbalance in our educational system and lack of appreciation of the dignity of labour, this ratio is not maintained. There is at present insufficient production of technicians and craftsmen in this country.

University Education

In the early stages, Universities provided a liberal education in the humanities, social sciences and natural sciences. As time went on, professions such as agriculture, engineering, medicine, law, commerce and management found places in the Universities. Some educationists opposed the idea of teaching professions in the Universities. In his eloquent book on education "The Idea of a University" Cardinal Newman writes:

"This I conceive to be the advantage of a seat of universal learning, considered as a place of education. An assemblage of learned men, zealous for their own sciences,

and rivals of each other, are brought by familiar intercourse and for the sake of intellectual peace, to adjust together the claims and relations of their respective subjects of investigation. They learn to respect, to consult, to aid each other. Thus is created a pure and clear atmosphere of thought, which the student also breathes, though in his own case he only pursues a few sciences out of the multitude. He profits by an intellectual tradition, which is independent of particular teachers, which guides him in his choice of subjects, and duly interprets for him those which he chooses. He apprehends the great outlines of knowledge, the principles on which it rests, the scale of its parts, its lights and its shades, its great points and its little, as he otherwise cannot apprehend them. Hence it is that his education is called 'liberal'. A habit of mind is formed which lasts through life, of which the attributes are freedom, equitableness, calmness, moderation and wisdom; or what in a former discourse I have ventured to call a philosophical habit. This then I would assign as the special fruit of the education furnished at a University, as contrasted with other places of teaching. This is the main purpose of a University in its treatment of students.'

Cardinal Newman's view was that the University trained the mind by immersion in the liberal arts and thereby prepared the individual for any of the professions. Techniques could be acquired easily by anybody with a developed philosophical outlook.

In the nineteenth century, the foundation of the University generally was liberal studies and graduates who later made their mark in the professions were trained in courses such as classics, modern languages, philosophy, mathematics and science.

Professionalism involves (i) specialization i.e. the concentration on a segment of knowledge (ii) emphasis on techniques, and (iii) utilitarianism i.e. by concentrating on and mastering a segment of knowledge and appropriate techniques,

the professional student has the capability to help his fellow men in some immediate and palpable way.

In general, the gradual envelopment of the liberal arts by the professional schools has made the students to be more conscious of their relation to society and its problems. The so called Redbrick Universities in United Kingdom grew out of professional schools, mostly medical schools.

Cardinal Newman's point of view can be seen to have been defeated in the real situation.

Today, the system of higher education in United States is the most extensive in the world. During the last two centuries, higher education in U.S. has expanded and diversified in response to socio-economic needs of the community. Educational programmes are offered by a range of institutions such as Research Universities, Liberal Arts Colleges, State Colleges and Universities, and two year Community Colleges. The awards of these institutions ranges from certificates to associate, baccalaureate, masters, doctoral and professional degrees. Students can choose from among hundreds of programmes in vocational education, professions, liberal arts and sciences and continuing education.

The federal Morrill Act (Land-Grant Act) of 1862 is the most important factor in the spread of public higher education in U. S. This act called for the establishment of a land-grant University in each state to provide higher education in agriculture and engineering. Vast areas of land were vested on these institutions. These land-grant Universities have now developed into large and prestigious institutions, offering a full range of research and learning opportunities for scholars and students, while serving the specialized needs of their state population.

The federal and state governments in U.S. are committed on providing equal opportunity for all persons, from the full range of socio-economic, racial and ethnic background, who seek to further their education.

In the middle of 20th century, Community Colleges, which are tuition free two year colleges, were established throughout U.S., which emphasise on terminal (non-degree granting) programmes but also prepare those students who want to continue their education in the four year colleges. About a quarter of the total number of students following higher education are enrolled in the two year colleges.

Although school education expanded widely in Sri Lanka since independence, University education did not expand with the same pace. Number of Universities increased and now we have eight traditional Universities and one Open University. But the intake into the traditional Universities did not increase significantly over the years. Out of the students who sat for the G.C.E. (A.L.) Examination in 1988, only 6,360 found admission to the Universities. The admissions for 1989 has been increased to 9,040.

The number of students following University education in this country compared to the population is one the lowest in the world. The aspirations of our people for higher education are very high and the Government has to adopt meaningful steps to meet their aspirations. Education is a major factor that provides social mobility among the poor and down-trodden masses and backward village folk. The right for education is a fundamental right and higher education should be made available to all the children who aspire for it. It is a wrong policy to limit higher education to the number who can find employment in the state and private sectors at present. The main difficulty the State faces is how to meet the demand for higher education with existing resources, while maintaining standards of excellence.

The Jayatilake Commission was of the view that tertiary education should be restructured to cater for all the students who sit for the G.C.E. Advanced Level. The Commission has recommended that Tertiary Education be divided into two: (i) general Tertiary Education for those who wish to develop broad-based skills

for the intermediary positions in our society, (ii) honours degree and specialisations where standards of merit and excellence become the primary criteria. The Commission has recommended that nine Regional Colleges, one in each province, each admitting 3000-4000 students, be established to meet the needs of the present number of students who apply to enter Universities. The Regional Colleges will conduct the following programmes: (i) general science degree leading to B. Sc., (ii) liberal arts degree leading to B.A., (iii) medical studies degree leading to B.Sc., (iv) legal studies degree leading to B.A., (v) engineering degree leading to B.Sc. Students from Regional Colleges may enter the work force, move in a parallel direction to the affiliated technical and professional institutions or continue with their studies either being admitted to the University or by pursuing a course at the Open University. The Commission is of the view that Universities should become centres of excellence which also concentrate on postgraduate and research studies; research which is directly relevant to the needs of the country.

University Colleges

The Government has decided to set up University Colleges to cater to the needs of students who qualify to enter the University but are prevented due to lack of places in the University. It has been proposed that nine University Colleges would be established in the nine provinces before the end of this year. Later, University Colleges will be established in each district. These colleges will be affiliated to the existing Universities which will be responsible for maintenance of academic standards and the award of Certificates/Diplomas/Degrees. University Colleges will concentrate on offering courses which are professional or employment oriented with an all round education; courses which would have a potential for employment or self-employment. The curriculum will have a compulsory component of professional or on the job training.

A certain proportion of students who perform well in the University College will be able to gain admission to conventional Universities and continue their higher education.

The University Grants Commission appointed seven Task Forces in the following disciplines in April 1990 to advise on programmes to be started in the proposed University Colleges:

- (1) Agriculture/Animal Husbandry/Veterinary Science
- (2) Commerce and Management
- (3) Engineering
- (4) Mathematics
- (5) Medical/Para-medical
- (6) Science
- (7) Social Science

The programmes identified by the respective Task Forces to be implemented in 1991 are given in Appendix 1.

Open University of Sri Lanka

The Open University of Sri Lanka, established under the Higher Education Act, No. 16 of 1978 was inaugurated in 1980. It offers programmes of study leading to the award of Certificates, Diplomas, Degrees, Postgraduate Diplomas and Postgraduate Degrees. To enter this University no specific entry qualifications are required, but students should be over 18 years of age. The Open University grants exemptions from some courses in a programme, depending on the approved qualification possessed by the student.

Students are given the opportunity to acquire further knowledge through distance education methods while continuing in their own environment. Courses are generally conducted during week-ends and holidays to give opportunity for those in employment to improve their career. The teaching methodology

used consists of specially designed printed lesson material, audio visual aids including audio and video cassettes, face to face teaching, seminars, workshops, laboratory and field work depending on each programme of study.

Educational facilities to students are provided through four regional centres located in Colombo, Jaffna, Kandy, and Matara and twelve study centres distributed throughout the island. Performance of students is evaluated by continuous assessment of regular assignments, tests and examinations conducted at the various centres.

The Open University charges fees from its students. The different academic programmes of study available in the Open University which are conducted in Sinhala/Tamil and English are given in Appendix II.

Degree Awarding Institutions

The Higher Education Act No. 16 of 1978 makes provision for the Ministry of Higher Education to evaluate institutions conducting courses at degree level and register suitable institutions as Degree Awarding Institutes and allow them to award degrees on approved courses. Two such institutions have so far been granted permission to award degrees. The Institute of Technological Studies located in Colombo, which is a private institution, has been granted permission to award B.Sc. degree in Computer Science. The Institute of Surveying and Mapping located in Diyatalawa, which is a state institution under the Survey Department, has been granted permission to award B. Sc. degree in Surveying.

Tertiary Education and Employment

Jayatilake Commission report does not agree with the views expressed by some that more education under present circumstances will only result in an accelerated output of educated unemployed. Its contention is that the problem is not one of education but the mismatch of employment with

tertiary education skills. The Commission is opposed to the view that an education system should be solely geared for job creation. However for restructuring education, it makes the following suggestions:

- (a) "Increasing the vocational and training component in education so that students learn non-academic skills. With these skills they will be able to join the private sector or engage in self-employment.
- (b) Enhancing the component of tertiary education aimed at developing 'intermediary skills', general skills with lesser expectation of status as well as technician skills which are currently lacking so as to make the University graduate more diversely employable.
- (c) Augmenting the opportunities to shift careers in mid-stream, or to move, among different fields so as to have the flexibility and elasticity to make use of available job market projections".

Mismatch between education and employment can be due to the following two factors viz. (a) failure of the education system to provide a workforce with required skills, aptitude and orientation and (b) failure of the economic system to make the proper investments and choices to technology to match the available workforce.

The growth areas in our economy are agriculture, fisheries, manufacturing industry and trade, whereas in areas of social and personal services including public administration, employment potential is decreasing. But the education our children receive and the social values with regard to status make them to look for white collar jobs and to dislike jobs in the most productive sectors of our economy.

One of the answers to the problem of unemployment is self employment and the State should provide the necessary inputs and incentives to make such a scheme a success.

Jayatilake Commission has identified the following key elements required to make nationwide self-employment programmes a success:

- (i) "An education oriented towards self-employment, self initiative and self reliance.
- (ii) Capital for self employment on concessionary terms.
- (iii) Assistance to identify and set up self employment ventures.
- (iv) Technical assistance and know-how; information dissemination in Sinhala and Tamil; extension services.
- (v) Collection centres and marketing systems, including export.
- (vi) Government policy sensitive to the need to foster the growth of the self employment sector."

Providing tertiary education to all those who desire to learn is not an undesirable thing. If a person with tertiary education is trained in entrepreneurial skills and given financial backing, he will become an employer and generator of employment.

The National Seminar on Small Enterprises Development held recently in Colombo has recommended (i) "Entrepreneurship Development Programme should be accepted as an effective medium for promotion and growth of small and medium enterprises; (ii) Formulation of a suitable national policy for introducing entrepreneurship education and training in the educational system at the primary, secondary and tertiary levels both in general academic institutions as well as vocational technical institutes, taking into consideration the urgent demand for a more entrepreneurship society."

Steps should be taken to introduce entrepreneurship education into our schools, Universities, technical and vocational institutes and other tertiary education institutes. Since self-employment is the option for many who cannot find jobs, the educational system should prepare and train them to

initiate a small enterprise. Research and experience have shown that entrepreneurial attitudes and orientation for self employment through skills training can be integrated into the formal school curricula.

At present, the technical education system imparts education and training mainly suited for wage – employment in large and medium scale industries. Majority of students who come out of these institutions lack the confidence needed for setting up their own cottage and small enterprises. Hence there is a need to gear the technical education system to self employment through systematic approaches to entrepreneurship development.

Concluding Remarks

(1) Reforms should be introduced into the School Education System so that school leavers would be able to find suitable employment or become self-employed. During the school education, students should be provided with technical, vocational and entrepreneurial skills.

(2) School education should inculcate in the minds of students love for their land of birth, language and culture, spirit of volunteerism and sense of service to their Community.

(3) A period of national service of one to two years should be made compulsory to all school leavers. This period could be used to get the students to appreciate the dignity of labour by getting them involved in the world of work and increase their social awareness by getting them to know the living conditions of our people.

(4) The right to receive education is a fundamental right. Facilities for education should be expanded to meet the aspirations of the people.

(5) Provision should be made in Universities and other Higher Educational Institutions to admit all students who aspire to join these institutions and qualify to enter them. To meet

the resources required to allow this, infrastructure facilities available in the region should be utilised and teaching methodology such as distance education methods should be used.

(6) Universities should not be just ivory towers of scholarship, restricting their activities to teaching and research, but get involved in extension work and contribute to the upliftment of the social, economic, political and cultural life of the community.

(7) In addition to the traditional courses conducted, Universities and other Higher Educational Institutions should conduct on-campus and off-campus continuing education programmes, short duration courses, training programmes urgently needed for development of the community.

(8) Facilities for technical education and vocational training should be expanded to produce more technicians and craftsmen. Special attention should be given for education and training in the fields of agriculture, fisheries and forestry.

(9) Courses in entrepreneurship should be introduced into schools, universities, technical and vocational institutes and other tertiary education institutes.

APPENDIX I**Courses Identified for University Colleges****(1) Agriculture**

- (a) Export Agriculture
 - (b) Plantation Management
 - (c) Agricultural Development and Communication
 - (d) Agri-business Management
 - (e) Field Engineering
 - (f) Farm Machinery and Post-Harvest Technology
 - (g) Food Preservation Technology
 - (h) Animal Science
 - (i) Environmental Science
 - (j) Soil Fertility Management.
- One year Certificate / Two Year Diploma

(2) Commerce and Management

- (a) Entrepreneurship and Small Business Management
One year Certificate / Two Year Diploma
- (b) Library and Information Sciences
One year Certificate / Two Year Diploma
- (c) Accounting and Financing
Two Year Diploma

(3) Mathematics

- Mathematical Sciences
- Two Year Diploma

(4) Medical / Para-Medical

- (a) Pharmacy
- (b) Nursing
- (c) Environmental Health
One Year Certificate / Two Year Diploma

(5) Science

- (a) Food Science and Technology
One Year Certificate / Two Year Diploma / Three Year Degree
- (b) Home Science and Nutrition
One Year Certificate / Two Year Diploma / Three Year Degree
- (c) Laboratory Technology
One Year Certificate / Two Year Diploma
- (d) Teacher Training
Two Year Diploma.

APPENDIX II

- (1) Certificate in Pre-School Education
- (2) Certificate in Entrepreneurship and Small Business Management
- (3) Certificate in Textile Technology (Spinning, Weaving, Chemical Processing, Garment Technology)
- (4) Certificate in Professional English
- (5) Diploma in Management
- (6) Diploma in Technology (Civil, Communication, Electrical, Electronics, Mechanical, Textile).
- (7) Bachelor's Degree in Law
- (8) Bachelor's Degree in Science
- (9) Bachelor's Degree in Technology
- (10) Postgraduate Diploma in Education
- (11) Postgraduate Diploma in Distance Education
- (12) Postgraduate Research Degrees (M. Phil.; Ph. D.)
- (13) Continuing Educational Programmes
- (14) Courses of Study for Associate Students

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7. Bachelor's Degree in Science

8. Bachelor's Degree in Education

9. Bachelor's Degree in Technology

10. Bachelor's Degree in Education

11. Bachelor's Degree in Education

12. Bachelor's Degree in Education

13. Bachelor's Degree in Education

14. Bachelor's Degree in Education

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