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FINAL REPORT

GEOGRAPHY SUBJECT

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Domestic Consultant/Geography Subject.
SEMP-PHASE ll (ADB/NDF No: 356

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APPEDICES

ABBRIVIATIONS

ADB	Asian Development Bank
BC	before Christ
BMV	Balika Maha Vidyalaya
CAL	Computer Assistance Learning
CCD	Coast Conservation Department
CD	Compact disks
CEA	Central Environmental Authority
CLC	Computer Learning Centres
CPOs	Counterpart Officers
DDE	Deputy Director of Education
DoE	Department of education
EFC	Environmental Field Centre
EPD	Education Publication Department
FAO	The UN Food and Agriculture organization
FD	Forest Department
G7	Economic and Political forum for seven of the world's most industrialized nations: Canada, France,Germany, Italy, Japan, Great Britain and the United States.
GCE O/L	General Certificate Education (Ordinary Level)
GCE A/L	General Certificate Education (Advanced Level)
GDP	Gross Domestic Product
GEP 2	German Education Progeamme
GIS	Geographic Information System
GM	
GNP	Gross National Product
GSMB	Geological Survey and mines bureau
HDI	Human Devolopment Index
ICT	Information Communication Technology
IN	India
IPCC	Intergovernmental Panel on Climate Change
ISAs	Human Resource Development
IUCN	The World Conservation union
JICA	Japan International Cooperation Agency
JP	Japan
MAB	Man and Biosphere
MD	Meteorological Department
MMV	Madya Maha Vidyalaya
MS	Model School
MV	Maha Vidyalaya
NARA	National Aquatic Resources Research and Devolopment Agency
NBRO	National Building Research Organization
NDF	Nordic Development Fund
NEC	National Education Commission
NETS	National Education Testing Service

NGOs	Non Governmental Organizations
NIE	National Institute of Education
NVQ	National Vocational Qualifications
NW	Norway
OPEC	Organization of Prtroleum Exporting Countries
PAM	Project Administration Memorandum
PEO	Provincial Education Office
PPP	Purchasing Power Parity
PQLI	Physical Quality of Life Index
SAARC	South Asian Association for Regional Cooperation
SBA	School-based assessment
SBM	School-based management
SEMP	Secondary Education Modernization Project
SFCP	School-focused curriculum programmes
SLTB	Sri Lanka Tourist Board
TB	Textbook
TEVT	technical education and vocational training
TG	Teacher guide
UK	United Kingdom
UNDP	United Nations Development Program
UNDP	United Nations Development Program
UNFPA	United Nations Population Fund
USA	United State of America
WB	World Bank
WHO	World Health Organization
WTO	World Trade Organization
ZEO	Zonal Education Officer

EXCECUTIVE SUMMARY

Based on my TOR (Chapter 1, Section 1.4), the quality improvement in grades 10-13 in Secondary Education was expected through strengthening of curriculum subjects. Geography was one of the selected subjects. The strengthening process for this subject was commenced at the beginning of January 2004 (for 6 person-months). The quality improvement and strengthening of secondary school curriculum emphasize that the general education system has a major role to play in cultural, social, scientific and technological development of Sri Lanka.

Chapter 1 in this report discusses the significance of learning Geography in general education. During the last five decades in Sri Lanka, the general school education and even university education have been very teacher-centred, but they should become student-centred and activity-based. Thus, teaching should ensure that geographical enquiry and skills are used when developing knowledge and understanding of places, patterns and processes, and environmental change as well as sustainable development. Furthermore this chapter highlights emphasize that when quality improvements of the geography curricula should be reflect that every student learner is uniqe with differences in age, learning ability, interests, aptitudes, attitudes, motivation, and social backgrounds. Further, the curriculum is influenced by continuing and changing needs of the individual and the society. It is also influenced by inputs from new knowledge and skills acquired through research and development in the field of geography.

The design of geography curriculum is explained in **Chapter 2.** There are many forms of curriculum designs, but they share some common qualities as: scope, sequence continuity, articulation and balance, which have been discussed in detail. The existing geography curriculum has clearly affected the number of students and the pass rates.

Strengths and weaknesses of the existing geography curriculum of grades 10-13 are highlighted in **Chapter 3**. The section 3.1 in this chapter discusses the strengths and weaknesses of the existing geography syllabus, teachers' guide and the textbook of the grades 10-11 (GCE OL). Similarly, the section 3.1.2 shows the strengths and weaknesses of the geography syllabus teachers' guides and textbooks in grades 12-13 (GCE AL). The practical difficulties, in implementing of the geography curricula are pointed out in Section 3.2.

Chapter 4 depicts the improving of geography subject curriculum. In Sections 4.1 – 4.3, the modernizing of the geography curriculum is explained. Recommendations relating to grades 10-11 and common recommendations for grades 10-13 are given. In these recommendations, 1-6 emphasize improvement of grades 10-11 geography. Recommendations 7-8 are mainly related to the assessment procedure and designing of learning materials. Recommendations for the use of computers in school education and are indicated in 9-10.

Chapter 5 discusses nine recommendations, implementation of the geography curriculum, teachers' capacity building measures, development of teachers training programmes, facilities & required resources, institutional development and improvement of textbooks etc.

In **Chapter 6,** the significance of career development and employability is discussed. Counselling and guidance are needed for students and school leavers. Awareness programmes should be conducted to change the negative attitude of policy makers and decision makers. Further, this chapter emphasizes the necessary development of skills and predispositions that are required to meet the demands of the competitive labour market in geography there is no a labour market in the geography ''subject''. However, there may be geography related job market. The eligibility of students who study geography in both junior and senior secondary education, for technical or vocational training, and the establishment of proper counselling and career-guidance units to find employment opportunities, are discussed in this chapter. Finally, a summary of all 22 recommendations from Chapters 4, 5 is presented.

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1.

GEOGRAPHY SUBJECT

1.1 INTRODUCTION

"While Sri Lanka has achieved progress in basic human development, it has been unable to translate these achievements into broad-based, sustainable economic growth. Worse still, the rural poor have not had equal access to human resources necessary to acquire social and physical capital. A key reason for this failure to achieve more rapid economic growth with greater equity is the deficiency of the education system" (PAM, 2001). This emphasizes the fact that the general education system has a major role to play in Cultural, Social, Scientific and Technological development of Sri Lanka.

Geography describes and analyzes the spatial variations in physical, biological, and human phenomena that occur on the surface of the Earth. Likewise, this subject considers their interrelationships and their significant regional patterns. The sub disciplines of geography are physical, human, and regional geography (Figure 1.1). Physical geographic features include the climate, land and water, and plant and animal life. In this category particular attention has been paid to coastal areas, to water and mineral resources (including energy), and to natural hazards. Human geographic features include artificial entities, such as nations, settlements, lines of communication, transportation, buildings, and other modifications of the physical geographic environment. Environmental management and conservation of resources fall between these two large fields.

The scale of study in regional geography may range from worldwide regionalization, to a continent, a major cultural area, a country, a sub region within a country, or a city. Consequently, geographers use economics, history, biology, geology, climatology and mathematics in their studies, which integrate cultural, scientific and technological development with physical geographic features. Teaching should therefore ensure that geographical enquiry and skills are used when developing knowledge and understanding of places, patterns and processes, and environmental change as well as sustainable development are understood.

Five fundamental themes in Geography have been identified to meet the National Education Goals in the United States: location, place, and relationship within the places, movement and region. In its inclusion of themes, both in England and Wales and the USA, geography has been identified as a uniquely useful subject in creating bridges between the humanities and sciences, and between social sciences. It also has a distinctive role in pursuing its objectives at local, regional, national, continental and global scales (Husen and Postlethwaite, 1995).

Quality improvements of the Geography Curriculum should be designed keeping in mind that every student learner is unique, with differences in age, learning ability, interest, aptitude, attitude, motivation, or social background. Furthermore, the curriculum is influenced by continuing and changing needs of the individual and society. It is also influenced by inputs from new knowledge and skills acquired through research and development in the field of Geography.

There is a growing awareness of the need for greater knowledge of the people of other countries, their physical environments, ways of life, problems, and goals, improvements in the teaching of geography, especially in secondary education in Sri Lanka. There for learning and teaching of geography also need to be reviewed and revised to meet emerging needs (NEC, 2003).

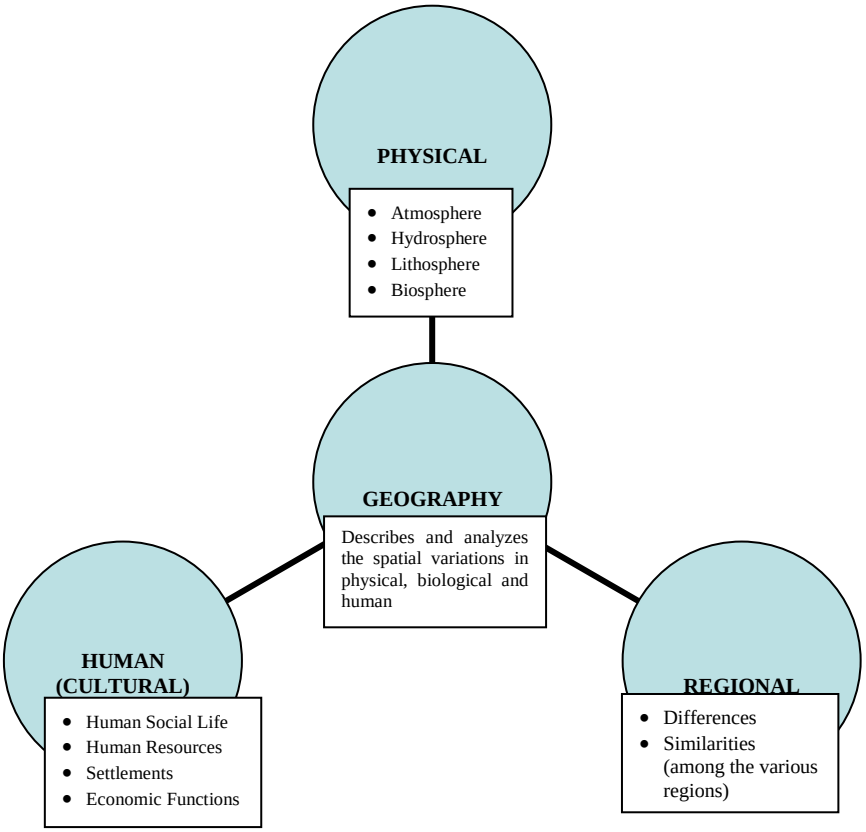

Figure 1.1 The sub disciplines of geography are physical, human, and regional geography

1.2 DIMENSIONS OF GEOGRAPHY EDUCATION

The word "geography" was adopted in the third century by the Greek scholar Eratosthenes and means "earth description". Scientific evidence shows that the physical and behavioral traits shared by all people evolved over a period of at least 6 million years, facing different physical geographic environments. Man faced a lengthy process of change, building up civilizations, which were in an advanced state of a society possessing historical and cultural unity. Likewise, human beings confronted natural disasters, such as floods, droughts, earthquakes, volcanic eruptions etc. Moreover, ancient peoples such as the Chinese, Egyptians, and Phoenicians, made long journeys and recorded their observations of strange lands. All these imply that the physical and behavioral linkages existed throughout evolution and their study has been significant in the improvement and strengthening of the subject of geography.

In Sri Lanka, Geography became a neglected subject at all levels in school education, following integration with History and Civics as Social Studies in 1972. This science has never played so conspicuous a role, or so widely engaged public attention, by 1942. To some degree, depending chiefly upon the layperson's alertness to contemporary news, everyone recognized more than ever before the impelling influence of the geographic environment upon the forces and events that made history in the Second World War. Before this, geography had been relegated to a minor place in the curricular program of higher institutions of learning, well-nigh banished from high schools, and reduced to a subordinate place even in grade-school programs, where it was considered to have some a cultural value. Now it has come recognized as one of the two most vital fields of study for the useful and intelligent interpretation of human physical and cultural character, on a par with history, and similarly indispensable.

Thus, geography occupies a distinctive place in the world of learning, offering an integrated study of the complex reciprocal relationship between human societies and the physical environments of the Earth. The geographer's canvas is coloured by place, space and time, recognizing the great differences and dynamics in cultures, political systems, economics, landscapes and environments across the world, and the links between them (Subject Benchmarking Statements, Quality Assurance Agency, UK, 2000). This shows that geography as a branch of learning has focused on understanding the relationship between man and nature.

However, during the past three decades, Geography has remained a neglected discipline in Junior and Senior education due to the extensive curriculum reforms in Sri Lanka, since 1972. Under these reforms, the teaching of History, Geography and Civics from Grade 6 was replaced by social studies, which was intended to integrate the three subjects. The integration of these content areas in the social studies curriculum did not take place, however, and teachers continued to confine themselves to their own areas of subject specialization, thereby undermining the expected outcomes of integration.

The NEC Report (2003) emphasizes that there was a strong demand during the public consultations, seminars and studies that the Social Science component of the curriculum should have separate subjects (History, Geography and Civics) as is the practice in most countries. Geography, in some ways is stated to have survived in spite of its integration into social studies. Nevertheless, the learning and teaching techniques in geography also need to be revived and revised to meet emerging needs (NEC, 2003).

Cultural (human) and physical Geography are the two traditional divisions in the subject. However, in recent years, a third category of "Environmental Geography" has sometimes been recognized at higher education level, and encompasses many courses that deal definitely with human environmental relations and sustainable development, and building upon the role of Geography in schools as the main discussion platform for environmental concerns. This emphasizes the fact that a sound knowledge of geography (as an interdisciplinary and multidisciplinary subject – supportive subject) at secondary education level is essential to provide qualified entrants for higher education, teacher training, and other courses in tertiary and post secondary education and training.

1.3 Strengthening Geographical Education

SEMP has three components: (i) quality, (ii) access, and (iii) efficiency (PAM 2001). The teaching of geography in secondary schools should be strengthened and enriched by adopting teaching processes that provide the students with the opportunity (NEC 2003):

(a) to acquire a wide range of transferable skills such as collecting and analyzing statistical data, forming calculations, and reading and constructing maps (using globes, atlases, satellite images and ICT)

(b) to engage in geographical inquiry inside and outside the classroom to learn about a wide range of people, places and environments, and the interface between humans and the environment.

Adapting to the learning process includes development of learning materials, and redevelopment and training of schoolteachers in the application of activity-based learning including monitoring, studies, and evaluation of these activities.

Geography courses at School level in Sri Lanka (Grades 10-13) can cover a wide range of issues and locations. Beaumont at el (1997) stress that research shows that with students of school age, issues such as care of the environment, protection of fragile landscapes and the effects of global warming are very important. Likewise, geography makes a contribution to general education as an auxiliary discipline. Higher Education Institutions and employers are impressed by applicants who have

a grasp of what is going on around them, locally, nationally and internationally. A geography course also helps develop useful skills such as questioning, problem solving and decision-making. Furthermore, Geography students follow the vocational route after GCE OL and AL; Geography can offer interesting employment opportunities. As the world's largest industry, the tourist industry provides an obvious outlet for students from National Vocational Courses such as Travel and Tourism and Hotel Management.

It is interesting to note that the most popular areas of employment for geography students are in agriculture, industry, environmental protection and planning, administration and operational management, together with research, design and development. All these areas reflect the need for strengthening geographical education by investigating, problem solving and decision making skills. Different types of International Geographical Congresses, Unions, Seminars/Workshops, Protocols etc. indicates that Geography was a widespread subject about 65 years ago (Collier's year Book 1938-1966: Geography).

To keep abreast of the news, to evaluate the significance of current events, to understand the course of international relations in all their aspects, all intelligent citizens have had to refresh their knowledge of geography and supplement it by learning new facts and ideas about lands and seas, rivers and mountains, ports and provinces, of which he or she had never before heard. Similarly, the change in methodology in the 1950s and 1960s was so rapid that it is sometimes called the "quantitative revolution". Geographers have also broadened their efforts to find practical applications for geographic studies (Collier's Year Book, 1940: Geography, Encarta Encyclopedia, 2004)

By the 1960s the field of geography had been divided into several schools of thought. Disagreement between scholars of different schools—such as those who supported the quantitative method and those who favored the descriptive approach—sometimes arose. Since the 1970s, however, different methods have been commonly used together and applied to many new areas of geographic study. During the 1960s, the Canadian government built the first Geographic Information System (GIS), a computer system that records, stores, and analyzes geographic information. These computer systems can create two- or three-dimensional images of areas that are used as models in geographic studies. They are designed to process massive amounts of data and help scientists conduct research much more quickly and accurately. The GIS has many applications in government and business.

Human beings are complex creatures full of prejudices, sympathies, and antipathies, all of which distort and circumscribe the power of reason on the physical world. If a person did not care for others, had no fellow-feeling for them, or thought them subhuman, that person would not take their interests into account and would find all kinds of reasons to ignore those interests. This leads to the destruction of physical and human environments. Therefore, for teaching of geography should ensure that geographical enquiry and skills are used when developing knowledge and

understanding of places, patterns and processes, environmental change, sustainable development and the visibility of human communities. As mentioned earlier, all these reflect that in the strengthening of geographical education emphasis on investigating, problem solving and decision making are very significant in widening the labour market through the Geography Curriculum in the secondary education system.

1.4 QUALITY IMPROVEMENT - THE SEMP GEOGRAPHY SUBJECT COMPONENT

To improve the quality of the Geography subject, SEMP defines the following Terms of Reference.

1.4.1 Terms of Reference

i Support NIE in the preparation of a timed, phased, prioritized and costed Action Plan for increasing labour market orientation of the geography Subject curriculum and development of a new generation of learning materials including measures for (i) Institutional development; (ii) Teacher Education; (iii) Materials revision and development; (iv) School Based Assessment implemented by the DoE/NETS (v) Determination of facilities and materials requirements. Ensure that measures are appropriately coordinated with other Action Plans for the Action Program of the Sub-Project.

ii Support NIE in the implementation of measures contained in the Action Plan and develop monitoring and evaluating systems and indicators for implementation of the Plan.

iii Organize a program of training and other capacity building measures for MoE, NIE and other relevant institutions to help ensure the sustained, efficient and effective achievement of measures foreseen in the Action Plan.

iv Provide advisory input to upgrading Educating Technologies to develop a programme of Geography learning utilizing the CLCs established under the project

v. Liaison with International Consultants where necessary and

vi Any other relevant work connected with the Sub-Project.

2.

Geography Curriculum Design

2.1 INTRODUCTION

Curriculum development is the process of translating educational objectives into course content and educational strategies (Comings and Kahler, 1984). Curriculum design for any type of project involves a five-step process: setting goals; setting objectives to meet those goals; defining and sequencing learning activities that support the objectives; identifying resources; and writing lessons plans.

The Curriculum Development component of the SEMP is expected to propose inputs to "Improve the quality of teaching and learning in schools". To develop learning ability in students, it is necessary that a well-developed curriculum in Geography is prepared and implemented in schools. The curriculum so designed should take into account the project goal of the SEMP, which is *"To provide the youth leaving school, especially after GCE A Level, the skills and predispositions required for meeting the demands of a competitive job market and to find productive employments".* It is therefore appropriate to review the existing Grades 10-13 Geography Curricula before changes are recommended or a new curriculum is proposed.

Geography helps students develop skills in many areas: literacy, numeracy, analysis, individual research, group discussion and the synthesis of facts, figures, ideas and perspectives. This provides them with ideal preparation for decision making in other subjects later when they start work. There is a huge variety of careers related to geography: earth sciences, agriculture, economics, education, environmental management, information services, business and finance, scientific services, management and administration as well as leisure, travel and tourism. Geography is the study of people and places, particularly locations, society-land relations and regional differentiations.

The form of curriculum design qualities is also very significant in order to reach the SEMP project goals. There are many forms of curriculum design, but they share common curriculum design qualities that can be identified as: **Scope, Sequence Continuity, Articulation and Balance** (Fernando, 2003). Accordingly, a curriculum scope refers to the breadth of the curriculum at any level, at any given time. The breadth of Grades 10 -13 (GCE OL and AL) Geography curricula reflects the diversity of themes that are covered at both levels.

Geography is an additional subject for G.C.E. OL, and the syllabus in this level is broken down into six sections: Earth, Sri Lanka, Physical Features of the World, Population, Economic Activities of the World and Practical Geography. Similarly, Geography at GCE AL has three examination papers namely: Practical Geography (Geography 1), Physical Geography (Geography II) and Development Geography (Geography III). The curriculum developers renamed papers II and III as follows: Physical Geography became Environment Geography as it is now and Development Geography became Human Geography.

Students are expected to take part in fieldwork exercises, case studies of each topic, skill features, and change adapt and apply what they have learned to the study of globes, maps, tables and graphs at both levels. Each section of these papers, tests descriptive knowledge of theories and practices. Accordingly, the **Scope** of geography consists of three essential characteristics of geographical work which can be identified as *location, society-land relations* and *regional geography*. Therefore, this subject curriculum of both levels (Grades 10-11 and 12-13) should be carefully designed so that the content will be as meaningful and integrated as possible for the student and manageable within the length of time allocated. Thus, the scope of geography curriculum refers to the breath of the curriculum and the given time. For example the breadth of Grades 10-11 and 12-13 refer to the variety of themes during two consecutive academic years.

The curriculum **sequence** is concerned with the appropriate order of the topics and sub topics over time. In Geography, the student might study first the dynamic earth, human resources, economic activities, then issues, in order of increasing complexity from Grades 10 to 13. Thus, the curriculum sequence exposes the curriculum content over a period of time; it is called the vertical dimension. Careful consideration should be paid to the sequencing of content, so that the student progresses continuously in learning tasks through hierarchical or logical steps (Fernando 2003).

The **continuity** of curriculum refers to the logical progression over time without any disruptions or gaps. A well-organized topic and content sequence of a syllabus gives good continuity. This feature of the Geography Curriculum Design has not been achieved. For this purpose, the Geography Syllabi at both levels are divided into main themes, and later divided into topics, subtopics and subdivisions under each theme.

The **articulation** of curriculum refers to the smooth flow of the curriculum content, synchronizing both vertical and horizontal dimensions, which clearly shows the quality and the yield. Quality of the teaching is very significant in relation to the curriculum content and the yield in the education sector. Especially important for measuring the quality of teaching is the relationship between performance of the students and the expected result at the end of a desired period of learning. The articulation gap in geography education in Grades 10-13 has also been accountable for the decline of knowledge or skill development through a learning process.

Balance in all aspects of learning in a curriculum is an instrumental fact. Educators were making considerable changes in instructional programs. Although there was no diminution of special emphasis on geography education programs for the talented, the areas such as the need for greater knowledge of the people of other countries, their physical environments, ways of life, issues and problems etc. were no longer receiving exclusive consideration. However, the lack of balanced teaching of geography education with compared with science, agriculture and other technological subjects, at secondary education in Sri Lanka, has created problems for disadvantaged children**.**

Faults in the design of the Geography curricula design have clearly influenced student numbers and the pass rates in examinations (Annex 2.1). The number of geography candidates sitting the A/L examination has been going down from 39,630 (28% of the total candidates) in 1996 to 20,606 (11.01%) in 2003, a 48% decline.

However, following the introduction of Geography as an "additional subject"[1], the number of candidates was effectively increased. In spite of this, due to the lack of an awareness programme for teachers, Teachers' Guides and Text Books, the results have been very weak. Accordingly, this dynamic and challenging subject should demand much curricular change and modernization at Secondary Education in Sri Lanka to meet the knowledge, skill and competency needs of the students.

2.2 CURRICULUM CONTENT

Regarding the curriculum content of the Geography subject, there is a need to identify the "**core".** The term "core curriculum" has been used in two ways in twentieth century education (Husen and Postlethwaite, 1995):

(1) In the 1930s it denoted a curriculum focusing on content of immediate significance for the learner. This involved topics such as adolescent needs or social problems.

(2) Since the 1960s the term has been used mainly in the context of determining what elements of the school programme should be strongly emphasized and taught to all students.

The present situation of Geography Education (general education) reveals that the students are good at book learning, but they are weak when they face practical situations. This shows the quality and the strength of the existing curricula. For successful geographical education, learning (knowledge acquisition), discovering (knowledge generation) and sharing (knowledge use) are very significant (Figure 2.1). To meet these tasks, a quality and efficient teaching environment must be established throughout the country.

Fernando (2003) mentions that the subject core curriculum content should have the following common characteristics:

- Basic and essential content required every student to develop knowledge, skills and attitudes comprehensively.
- A combination of content and student centered activities to meet the expected aims, goals and objectives of modernization of the subject.
- Inbuilt assessment procedures to ascertain the level of attainment of students.

School-focused curriculum programmes (SFCP) may be perceived as a decision-making processes, encompassing the activities of developmental planning, implementation, and evaluation of a whole school curriculum, in respect of learning skill, individual subject areas, integrated topics, and both compulsory and optional subjects (Husen & Posttelthwaite, 1995). But SFCP development occurs when the school develops its own curriculum based on its own educational philosophy.

[1] Seven additional subjects were offerd- History, Geography,Health and Physical Education, Devolopment studies, Literature (Sinhala/Tamil/English), the second National Language and another language-from which one or two could be selected (NEC,2003.44)

Similarly, SFCP consists of variety of elements: adoption, adaptation, revision, development, organization, implementation, and evaluation of elements of the curriculum, including classroom instruction and instructional material.

Curriculam developers should use a criterion-referenced approach in selecting the subject core curriculum content and the activities (Fernando, 2003). According to Fernando, it is advisable, first, to identify the desired student learning outcomes as performance objectives. Once the objectives are identified the second stage is to select the appropriate content and student-centred activities to achieve these learning outcomes. The learning outcomes must reflect the desire for all students to succeed to their maximum capacity. The curriculum developers must use their judgment and weigh the relative importance of content and activities against contribution to the expected aims, goals, and objectives.

A curriculumm developer supplies a written document. Such a written curriculum is needed to help teachers to organize the course. This should contain the necessary information to keep the course well run, such as:

1. The objective of the course - i.e. the tasks and sub-tasks that the students must learn.

2. The general methods that should be used to teach the students the various objectives.

3. The time and place where the students will learn - i.e. a timetable.

4. The methods used to assess the students.

In the Geography course, choices have to be made about what facts, skills and attitudes students should learn. Choices also have to be made about what details should be left out of the course. It is simply not possible to learn everything that is known about the earth, man and surroundings.

subject material can be categorised into three (Abbatt,1992): firstly "Must learn" is the target. These are concepts and skills that all students need to learn in order to be competent in their work. Teachers should stress the importance of these concepts and skills when they are helping the students to learn. These concepts and skills should be tested in examinations. Secondly, there are very many other concepts and skills that are "useful to learn", but they do not need the same emphasis. Nor should they be tested as thoroughly in examinations. Finally, there are also very many other concepts and skills that are "interesting to learn". Of course, teachers should not prevent students from learning anything. In fact they should show students how to learn from books, conversations and their own and other people's experience of the world. However, the teacher's main responsibility is to help the students to learn the comprehensive part of the syllabus, and concepts and skills should be tested in School Based Assesments.

3.

GEOGRAPHY CURRICULA FOR GRADES

10-11 AND 12-13 (GCE OL & AL)

3.1 STRENGTHS AND WEAKNESSES

Education is defined as the knowledge or skill obtained or developed through a learning process. Primary and secondary education involves preparing young people for adulthood and institutions of higher learning. Geography is one dynamic and challenging subject area of education that is taught in primary and secondary schools and pertains mostly to the study of the earth and its interrelationship with human life and activity. Understanding the significance of this relationship, policymakers and educationists have made it the focus of much curricular change in Secondary Education in recent years both in developing and developed countries (INTERNET, Search – Secondary Education Geography Curricula).

The word "curriculum" can be used in two different ways. It can be used to mean what actually happens during the course - the lectures, the work with students and so on. The other meaning is the written description of what happens. The Geography curricula at the general school education level in Sri Lanka appear as written descriptions (documents). Accordingly, the Geography curricula for Grades 10-13 should include Syllabi, Teachers' Guides, Teaching-learning resources and Text Books for use of students and teachers.

As mentioned in Chapter 1, during the past three decades, Geography has remained a neglected discipline in Junior and Senior Secondary School levels in Sri Lanka due to the extensive curriculum reforms in 1972. As a result, Geography was integrated with Social Studies from Grade 6 – 11, and has continued to be so for the past 3 decades. This reform deprived students of geographical skills such as knowledge and understanding of places, knowledge and understanding of patterns and processes as well as knowledge and understanding of environmental change and sustainable development. These specifications of knowledge, understanding and skills on earth, human needs and people and nations are needed by children, who become adults who live in society. However, the subject Geography has been taught at Grades 10-11 (GCE OL) as an additional subject since 2000, and implemented in the year 2001. At Grades 12-13 (GCE AL), the new syllabus was introduced in 1996 and it was implemented in the year 1998.

As mentioned in Chapter 1, geography occupies a distinctive place in the world of learning, offering an integrated study of the complex reciprocal relationship between human societies and the physical environments of the Earth (Figure 3.1). Geography courses at GCE OL & AL cover a wide range of issues and locations. Beaumont at el (1997) emphasized that research shows that for students of school age, issues such as care of the environment, protection of fragile landscapes and the effects of global warming are very important. Similarly, colleges and employers of most countries are impressed by applicants who not only have a good grasp of the area in which they are going to specialize but also are also aware of what is going on around them, locally, nationally and internationally. A Geography course also helps develop such

useful skills as questioning, problem solving and decision-making. Geographical knowledge provides a vocational route through NVQ or an academic route through A levels and a degree course. Geography can offer interesting employment opportunities, such as administration and operational management, together with research, design and development. All these areas reflect Geography's emphasis on investigating, decision-making and problem solving. Therefore, it is necessary to revive and revise geography education and link with environmental education to meet emerging needs as well as produce skilled workers. Likewise, learning and teaching techniques in geography also need to be concerned with the present declining trends in the study the Geography, and as such, there is a great need to revise and develop the Grades 7-13 syllabi, Teachers' Guides and Student Textbooks in detail.

3.1.1 Grades 10-11 (GCE OL) – Geography Syllabus

Strength

Curriculum developers at NIE have pointed out the aims of the curriculum, general objectives, teaching-learning strategies, mode of assessment, suggested number of teaching periods for each unit (main topic) and the procedures of assessment as strengths in the present geography syllabus. However, the headings such as national goals, set of basic competencies, school policy and programmes are common to the syllabi of subjects. Table 3.1 shows the specifications of syllabus strengthening of the geography syllabus.

Weaknesses

Weaknesses identified in the OL Geography curriculum on the basis of can be identified the results of the O/L national examination (Annex 1). Annex 1 indicates that the number of geography candidates sitting the GCE OL examination has increased from 85,000 in 2001 to 110,000 in 2003. But, the expected outcome is (results by grades) very weak. Accordingly, in 2001 the results by grade in Geography show that 2.47% GCE OL candidates obtained "A" Grades (out of 85415 candidates) and in 2002, 1.91% GCE OL candidates obtained "A" Grades (out of 104,441 candidates). "W" (weak pass) rates were obtained by 43.01% and 49.51% respectively.

The main weaknesses that can be found in the GCE OL curricula are given in Table 3.2. Among these weaknesses, excessive content, lack of suggested learning activities and suggested learning resources as well as school policy and programmes are very significant.

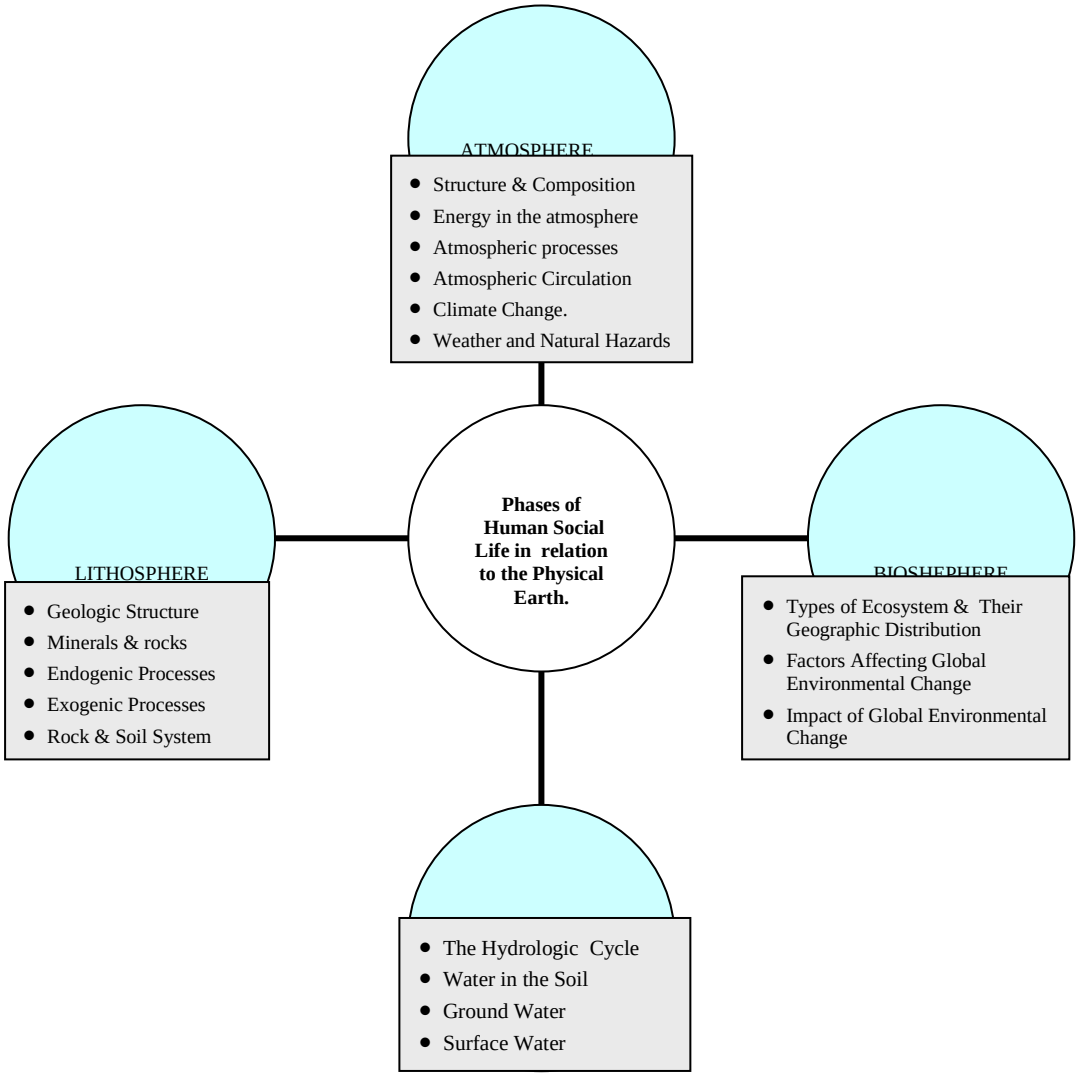

Figure 3.1 Relationship between human societies and the physical environments of the Earth

Teachers' Guide and Text Book for the GCE O/L Geography Subject

From 2000 to date, Geography has been an additional subject and students sat for the GCE O/L National Examination first time in 2001. Although, the Teachers' Guide for this subject has been produced, it has not been distributed to schools until the end of June 2004. This TG was first printed in 2002, reached the Social Sciences Department at NIE in May, 2004 from the Printers at NIE. Likewise, no Text Books have been produced by experts or responsible authors. However, the Common Objectives, Specific Objectives, Scope, Teaching and Learning methods, Assignments and Assessments in each Unit of the syllabus are clearly described in the Teachers' Guide.

TABLE 3.1 SPECIFICATIONS FOR SYLLABUS STRENGTHENING OF THE O/L GEOGRAPHY SUBJECT

1	Introduction	
	The subject Geography was a core subject in Secondary School Education (from grade 6 to GCE OL) until 1972. Since then, it was integrated as Social Studies (with History and Civics). According to the minor reforms of 1999, geography was introduced again as an Additional Subject for the GCE OL. The purpose of this was to give young people a greater knowledge of the people of other countries, their physical environments, ways of life and problems. This syllabus could help to develop basic understanding of global and regional issues and, in Sri Lanka this would help to lay the foundation for the achievement of the National Goals. For this purpose, the Geography subject has been divided into four parts, namely Practical, Physical, Human and Environmental. Some guidance has been given to teachers as how they should organize their teaching and learning processes to develop knowledge, skills and attitudes among the students. The school policy and programmes of school organization to facilitate the teaching-learning process in relation to the subject Geography.	
2	National Goals	
3	Set of basic competencies	
4	Aims of the Curriculum	
5	General objectives	
6	Teaching-learning strategies	
7	School Policy and Programmes	
8	Mode of assessment	
9	List of units for the subject	
10	Suggested number of teaching periods for each unit (main topic)	
11	Each unit consists of the following:	
	(i)	Objectives (The student demonstrates knowledge and understanding, skills and attitudes)
	(ii)	Key issues and concepts
	(iii)	Suggested learning activities
	(iv)	Suggested learning resources.

The text book for the map exercises was published by the EPD in 2003 (2004/c/10-11/510000). This is an integrated effort by the EPD, NIE, Survey Department of Sri Lanka and selected Master Teachers. Although this book has been distributed to the teachers and schools, it is unable to achieve the desired results have not been achived because of very low quality of printing (colours, symbols etc.). Distributing such low quality material to schools, especially to rural schools, will not help to make Geography teaching effective. A similar standard of production is found in the text book of Social Studies and History, Grade 11 (Map Studies, Chapter 6, and Page 107).

TABLE 3.2 MAIN WEAKNESSES OF GCE OL GEOGRAPHY SYLLABUS

ITEM	WEAKNESSES
Goal	Very little attention has been paid to the Bloom[1] or any other scientific classifications during the formulation of the curriculum.
	Little attention has been paid to the aims of the curriculum, general objectives and attitude development.
	Very little attention has been paid to develop the practical experiences, that are needed for skills development.
	No specific objectives have been indicated theme-wise.
Content	Adjustment of themes and the sequencing of topics are not satisfactory. Some subtopics of practical geography can be merged with other sections.
	Teachers are not given a choice due to the heavy content in certain topics.
	No suitable examples to help the student understand world from surroundings, have been given.
	Theme wise allocation of the number of periods is not mentioned. The periods mentioned.
Key issues and concepts	No indicated separately and clearly.
Suggested learning activities	No suggested learning activities have been allocated to each theme.
Suggested learning resources	No teachers' guide and text books. Although there are some additional reading books, no confidence can be placed pertaining to the quality. No guidelines have been mentioned for the selection of suitable learning resources.
Assessment	Suggestions for school-based assessment not included.
	Overloading of content in certain topics in the syllabus.
School policy & programmes	Teacher training programme for geography education has been neglected by the relevant institutions and authorities.

[2] Benjamin Bloom, a well-known educational theorist, suggests that there is a hierarchy of levels in each domain, with each new level building on the previous one and representing a higher intellectual, emotional, or physical stage. According to his theory, often known as "Bloom's Taxonomy," a student needs practice in the lower stages of learning to really understand the higher stages.

3.1.2 Grades 12-13 (GCE AL) – Geography Syllabus

The existing Geography GCE AL has three examination papers i.e. Paper 1: Practical Geography, Paper II: Environmental Geography, and Paper III: Human Geography. To revise and modernize the Geography curricula, two workshops were held on 12-13/05/2004 and 25-27/06/2004 correspondingly with stakeholders (University staff members, CPOc, SCP, DDE - MoE) and the consultant. Similarly, syllabi of Bio Resource Technology, Food Technology, Soft Technology, Economics, Business Studies and Biology were examined in detail for the grade 12-13 curriculum. Based on these workshops, it was possible to identify how the Geography subject relates to other subjects and any major overlaps the occur. This comparison is highly useful to identify the strengths and weaknesses of the existing curriculum and to revise and modernize the new curriculum.

Strengths and weaknesses

Syllabus

In Senior Secondary Education, Geography is a core subject and has been assessed by three examination papers for many years. The following syllabus specifications are included in the present Geography curriculum Grades 12-13 by the curriculum developers.

1 Syllabus
2 Teacher's guide
3 Text books

Each examination paper has a separate syllabus, and the curriculum developers arranged the general objectives based on these three papers. However, there are no specifications of syllabus strengthening of the GCE AL Geography subject as explained in GCE OL Geography subject. Main weaknesses identified in A/L Geography are similar to those GCE O/L.

Teachers' Guide

Two teachers' guides were published by the NIE in 1996 and 1998. The Teacher Guide Book 1 includes Geography 1 (Practical Geography) and Geography ll (Environmental Geography). Book II includes Geography lll (Human Geography). The Teachers Guide specifications related to GCE AL syllabus are given in Table 3.3.

At present text books have been written for the Environmental Geography, Human Geography Part 1 and Practical Geography. Writers and advisory committee members of the GCE AL Geography Textbooks are University Staff Members. Although, the existing Geography Syllabus was introduced in 1996, the Human Geography Part II has not yet been produced. Also, Text Books produced had heavy content, theme and were university biased Text Books. These books were not learning and teaching friendly due to the lack of the following:

- Chapter or theme objectives
- Suggested leaching strategies
- Case studies
- Skill objectives

- Questions (content check questions, special feature questions, review questions etc.)
- Applications
- Key terms
- Graphic skills
- Boxes
- Relevant photographs and images
- Further reading etc.

TABLE 3.3 THE TEACHERS' GUIDE SPECIFICATIONS FOR GCE AL GEOGRAPHY SYLLABUS

ITEM	SPECIFICATION
Unit	Unit & subunit (topic/topics)
	Total periods allocated
	Common objectives
Topic	Name of topic
	Allocated time for topic
	Scope
	Suggested learning activities Suggested learning processes
	Assessment
Key issues and concepts	Not indicated separately and clearly.
Suggested learning activities	No suggested learning activities have been given for each theme.
Suggested learning resources	Not mentioned in the teachers' guide and text books. Although there are some additional reading books, no confidence can be placed pertaining to the quality. No guidelines have been given on the selection of suitable learning resources.
Assessment	Suggestions for school-based assessment not included.
	Overloading of content in certain topics in the syllabus.
School policy & programmes	Teacher training programmes for geography education have been neglected by the relevant institutions and authorities.

3.2 PRACTICAL DIFFICULTIES IN THE IMPLEMENTATING THE EXISTING GEOGRAPHY CURRICULA

- Insufficient teaching material such as maps and equipment (tools) for practical work.

- Non-availability of resources such as textbooks (for the second part of Human Geography) teachers' guides, etc, for some teachers.

- Inadequate teacher training programmes.

- Lack of coordination among the MoE, NETS, NIE, PEO, Zonal Office and Universities

- Failure of SBM (Clashes of time tables/teacher-principal conflict)

- Student centered activities are to be restricted because of the rush to complete the syllabi before final examinations, Therefore, most of the topics are delivered through teacher centered lecture methods.

In order to overcome the weaknesses above, it is necessary to amend, revise and modernize the existing Geography curricula for GCE (OL) and (AL).

4.

IMPROVING THE GEOGRAPHY SUBJECT CURRICULUM

4. 1 MODERNIZIONG THE GEOGRAPHY CURRICULUM

Modernization is not a well-known and widely used concept in the context of education (Yrjönsuuri, 2003). When the goal, aim and purpose of the SEMP have been given, one can understand that there are certain internationally well-known principles orienting the tasks and activities of this project. The overall aim is to provide the youth leaving school with skills that are currently lacking. students' study activities at school should be developed to include training in such skills and competencies. For this purpose, it is proposed that new Geography curricula for GCE OL and AL, be amended, revised and modernized (Annexes 2 - 8).

On the basis of international trends and an analysis of Sri Lankan educational reform and curricula development, the word modernization means at least the following developments (Yrjönsuuri (2003):

(a) equip the students for a changing world,
(b) advance the students' competency in thinking,
(c) foster the students' creativity and ability to learn,
(d) promote the students' ability to choose,
(e) practice the students' co-operative, competitive and individual activity skills,
(f) provide the students with up-to-date content,
(g) balance focus between the breadth and depth of learning,
(h) use lessons based on students' own responsibility for learning,
(i) use assessment as an important tool to promote students' learning,
(j) train students in self-assessment and peer-assessment as important activities to promote learning.

To develop the students' skills, competencies and increase the pass rate, the aforementioned developments are very significant. During the past 30 year period, a decline of the subject occurred due to the weaknesses mentioned in Chapter 3 and lack of coordination among the responsible institutions (Moe, NETS, EPD, NIE, PEO and ZEO). To reach the desired goal and objective of the SEMP, development of teacher education and training are the first and most important. This should be a concurrent activity with the modernized syllabi. Teachers have to promote students' studying activities, and teachers have to change not only their actions, but also their own and students' thinking about education. Teacher education institutions, ISAs and Teacher Centres should work together for this. It is also essential, however, that school-based development work managed by the principals isinitiated. In many schools, the teachers and principals will not be committed to the change if they do not feel that they themselves have brought it about.

Modernization of the curriculum means that textbooks, syllabi, teacher's guides, circulars and other documents, prepared to help the teachers in their work, must be developed to support the change. However change requires school-based practical development work. The more the principals and teachers feel able to influence the course of events and the results of actions, the greater becomes their sense of personal responsibility for the change.

Yrjönsuuri (2003) further explains, a curriculum reform is a common undertaking of very many people from students up to the government of the country. It affects students' and teachers' lives in many ways. It includes challenging opportunities for success but also carries the risk of failure. It is never easy to carry through. The participants' positive attitudes are of the utmost importance for its success.

For the success of the reform the following attitudes and orientations are highly important:

(a) belief in a common goal,
(b) task orientation of all participants,
(c) responsibility,
(d) trust and empathy, and
(e) co-operation.

According to Yrjönsuuri (2003), consensus on a well-defined common goal for educational activities is important so that the different people working for reform do not impede each other's work. However, this sometimes happens within topics of the subjects, between the subject area, Arts and Sciences. Therefore, the goal of modernizing the curricula must be clear also to the students' parents and the students themselves.

The study of geography can provide a new and existing perspective on the Earth. Of course, there are many other reasons to study geography. Geography is a good way to learn about the Earth's varied regions and ways of life. In the study of the Earth, one uses geographer's tools, particularly maps and globes. They enable one to locate and compare places anywhere in the world. Therefore, a compulsory geography education is necessary in the secondary level schools of Sri Lanka as an integrated and additional subject to meet the varying requirements and interests of society. Consequently, the following recommendations are made to reach this target.

4.2 RECOMMENDATIONS RELEVANT TO GRADES 10-11 (GCE OL)

Recommendation 1: *Consider Geography as a subject (as an interdisciplinary and multidisciplinary subject) offering flexibility as well as variety to meet many requirements and interests of society.*

From studying the earth, geographers have learned that its features are always changing. Some changes take place over millions of years, while others happen in a day's time. Some changes are due to natural causes, and other changes are due to human activities. The word "Geography" related to these natural and man-made causes that concern the people, places and time. Accordingly, the Geography Syllabus links to more specific themes, topics and objectives, which may be used to determine student-centred programmes (Merrill, 1999). Such a program endeavors will help students to:

(a) Understand basic geographic concepts.
(b) Explain general physical characteristics of the Earth.

(c) Explain human patterns that have developed because of the physical environment.
(d) Describe relationships that develop between people and places as physical and cultural features interact.
(e) Summarize how people have changed their physical environment to suit the needs of their cultures and the effect these changes have had on Earth.
(f) Use maps to gather data, recognize physical and human patterns, and interpret the meaning of these patterns and how they relate to people and places.
(g) Use the steps of logical inquiry in their study of geography.
(h) Recognize regions and common characteristics that form regions.
(i) Gain insight into the ways of life of people from many different regions and common characteristics that form regions.
(j) Increase awareness of the interdependence of cultures throughout the world.

All these clearly show that the Geography is a subject linking Earth Sciences, Applied Sciences and Social Sciences. Accordingly, the Geography subject helps one to learn about the land, water, air and human societies. We should promote the study of these areas and their impact on the individual and society.

It is proposed that the modernized GCE OL and GCE AL Geography Curricula should link earth sciences, applied sciences and social sciences around major study themes and their impact on the individual and society. The major study areas for the GCE OL (Grades 10-11) include the Physical Environment, Human Resources, Economic Activities, Sri Lanka (Physical Environment), Sri Lanka (Human Environment) and Practical Geography. Likewise, the major study areas for the GCE AL (Grades 12 – 13 focus on propose two papers, Paper 1 – Physical Environment and Paper II – People and Human Environment instead of three Papers. Paper I covers six themes and the Paper II covers four themes. Each study theme is further sub-divided into topics, sub-topics and contents (Annexes 2 - 4 for GCE OL and Annexes 5 and 8 for GCE AL).

Physical Geography explains and tries to understand the diverse processes and phenomena in existing nature. Therefore, Climatology, Meteorology, Hydrology, Pedology, Botany, Ecology, Geology, Geomorphology, Astronomy, Geodecy and Cartography are integrated with physical geography (Oberlander and Muller, 1987). In addition, Zoology and Seismology also link with physical geography. Likewise, Human Geography considers all phases of human social life in relation to the physical earth. The study of human social life deals with Population Geography, Economic Geography, Cultural and Social Geography, Urban Geography, Political Geography, Medical Geography and Historical Geography. Emphasizing both the physical and the human dimensions, Regional Geography concerns the differences and similarities among the various regions of the earth. Geography should not be a part (1/3) of Social Sciences as mentioned in NEC (2003). Two important things will happen: (1) the NEC's expected outcome will not be achieved and the geography learners become destitute and a lost generation, (2) over 110,000 students who are

really interested in studying geography will be deserted. However, trends from 2001-2003 indicate that students for Geography (additional subject) will be estimated 150,000 by 2007. Therefore, Geography should not be integrated again with Social Sciences.

Example:
When studying natural disasters as a lesson for the topic Dynamic Atmosphere, the teacher should be empowered to select the most appropriate disaster, such as drought, landslide, thunder and lighting, floods etc. compatible with the surroundings where students live, and direct them to make an in-depth study. For this purpose, field visits can be organized and relevant photographs, videos and CD software can be used to show the damage to property and the effects on human lives. Cooperative work and group discussion should also be promoted.

Recommendation 2: *Include common core (must learn) subject content in the Geography Subject Curriculum, to provide basic knowledge, skills and attitudes, which enrich students lives and work.*

The major weaknesses in the GCE OL Geography Curriculum were described in Chapter 3. Moreover, SBA has not been introduced to the subject, and the teachers often adopt the lecture method (dictating notes using chalk and blackboard) to complete the syllabus content before the term tests and GCE OL examination.

Students are good at book learning, but they are weak when they face practical situations. Therefore, a written curriculum is needed to help teachers to organize the course. It should contain the necessary information to keep the course well run and to provide basic knowledge, such as:

1. The objective of the course - i.e. the tasks and sub-tasks that the students must learn.

2. The general methods that should be used to teach the students to reach the various desired objectives.

3. The time and place where the students will learn - i.e. a time table.

4. The methods used to assess the students.

Students' skills and attitudes are very significant for all to live in society and in the world of work. The teachers teach the syllabus following a time table for Term Tests as well as National Examinations. Teachers often complain that when students finish

their learning, they know many facts but they cannot understand and apply them. In other words, they have the knowledge but they do not have enough skills and competencies. The reason for this would be that the teachers have not a proper training and skills to develop the students' skills.

Teachers often use the following pattern when they teach skills: (a) describe the skill - explain what the skill is, why it is important, and when it should be used, and (b) demonstrate the skill - let the students see an expert (often the teacher) use the skill. Therefore, theory and practice should be taught inside the classroom together. For example, consider a teacher teaching students about soil conservation and management. The following activities would be most useful for the task:

(a) Read a section from a manual on soil, soil conservation and management.

(b) Transfer brief notes to the board.

(c) Make notes in students' words on why there is a need to conserve and manage the soil.

(d) Write down the factors affecting in soil erosion.

(e) Make notes in students' words on how to conserve and manage the soil.

(f) Use the school garden or any surrounding area to observe soil erosion.

(g) Discuss this particular exercise in relating to each student's home garden or surrounding area.

(h) Write down a short assessment and discuss with the students as a group activity.

Thus, the core subject content is essential to develop the ***basic knowledge, skills and attitudes*** of the students.

Recommendation 3: *The contents of all categories of the curriculum (basic and essential) should be supported for all categories of learners. Every learner and school is unique.*

To achieve good results in the teaching and learning, SBA was introduced by NETS 2001 for the GCE OL and 2003 for the GCE AL (Modernized Guide Book, 2003, NETS). For this purpose, different learning methods have been identified to evaluate the teaching-learning aspects (Perera, 2003). This can be achieved through student-centered activities. Fernando (2003) has designed student-centered activities to cater to all categories of learners; from simple activities (to help slow learners) to more

difficult and complex activities (to meet the challenging demands of the higher ability learners).

Recommendation 4: *Improve administrative and operational management, and promote research, design and development skills among the students. Greater emphasis should be given to student-centred activities such as investigating, decision making and problem solving. Such creative activities definitely help to develop the employability/working life skills of students.*

In developed countries, many geography students select this subject for three reasons (Beaumont, 1997).

1. It is a subject they enjoy and are interested in
   Geography covers a wide range of issues and locations. The students of school age are much more likely to study topics such as care of the environment, protection of fragile landscapes and the effect of global warming with interest.

2. Breadth and balance
   For most students, GCE (OL) Geography will be their last experience of the subject. It will be one of about 10 subjects they will study. Geography makes a contribution as an integrated and additional subject in general education. For the development of employability and working life skills, learners specialize in Science or Commerce subjects. Such learners are also aware of what is going on around them, locally, nationally and internationally. Therefore, a student-centered geography curriculum helps them develop useful skills such as questioning, problem solving and decision making.

3. It can provide jobs.
   Students who enjoy the course may decide to specialize in Geography. For a student who follows the vocational route through National Vocational Qualifications or the academic route through A/L and a degree course, Geography can offer interesting employment opportunities. As the world's largest industry, the tourist industry provides an obvious outlet for NVQ courses such as Travel and Tourism. Degree courses might lead to employment in such areas as environmental protection or planning. However, it is interesting that the most popular areas of employment for Geography graduates are in administration and operational management, research, design and development. These areas reflect Geography's emphasis on investigating, decision-making and problem solving.

Geographers live in the physical environment and society. As mentioned by Fernando (2003) students are involved in some kind of learning pertaining to science, both in and out of school, every day. Geography is also involved in learning both in and out of school every day. In this respect, teachers should be taught geography if they are going to help students:

- To ask useful, relevant and productive questions.
- To investigate things and explore ideas.
- To seek and develop explanations that are meaningful and useful to them, with respect to the natural and technological world they confront daily.
- To broaden their experience of Society, nature and technology.

For this purpose, issue-based and action oriented teaching strategies can be adopted to involve more students. Lessons on the issue of dumping of garbage, the dengue fever, and causes of landslides should be designed for small groups, and/or sometimes for a large group to educate the students on spatial, location, climate change, human impact and environmental issues. Activities should include field investigations, surveys (mapping, measurement and data collection etc.) experiments (rocks and soil), project assignments (group discussions, report writing and presentations, and tasks with problem solving, issue-based and action-oriented approaches. These activities will help to develop communication, manage information, investigation, problem solving, logical and creative thinking, cooperative work and decision making, in addition to the development of cognitive and psychomotor skills in students. Furthermore, all of the above these will help to develop working skills, life skills and employability.

Recommendation 5: *Students should be encouraged in more cooperative learning (team work) than individual learning. Group work or collective work among students can help achieve the desired objectives of the student-centered curriculum.*

Different categories of students can be seen in a classroom. Therefore, a teacher needs an instinctive knowledge to identify each student. Sometime, teachers spend much time on individual student assessment, and sometime, the teacher neglects the slow learner. Likewise, the teacher may favor high ability students. The geography teacher should encourage appropriate interaction between students. Consequently, the teacher can form several groups of students for a core lesson in the curriculum. For this purpose, the teacher can use learning materials and learning methods to reduce inequality between the students and in the learning situations.

There are three basic ways students can interact with each other in their study activities (Fernando, 2003). They are:

(a) Compete to identify who is "more superior" or "the best" (competitive learning)

(b) Work as individuals towards a goal without paying attention to others (individualistic learning).

(c) Work cooperatively with greater vested interest in each other's learning as well as one's own (cooperative learning).

Of these three interaction patterns, competition is presently the most dominant, especially among higher grade students, where one tries to do better than the other students. Cooperation among students is still rare, due to the competitive examination system, as students are more concerned with achieving good examination results.

Forming students, into groups does not necessarily guarantee cooperation among the students. As mentioned by Fernando (2003), it is only under certain conditions that cooperative learning may be expected to be more productive. These conditions are:

- **Positive interdependence**
  This is the perception that one is linked with others in the group in such a way that one cannot succeed unless group members help each other. It promotes a situation in which students work together in small groups to maximize the learning of all through mutual support.

- **Face-to-face encouragement interaction**
  Among students, establishment of positive interdependence is necessary to maximize the opportunity for students to promote competitive learning. In this sense, the learning of each group member can be promoted by helping, assisting, supporting, encouraging and approving. These are cognitive activities and interpersonal dynamics that only occur when students get involved in promoting each other's learning. To obtain meaningful face-to-face interaction the size of groups needs to be small (3-5 students).

- **Individual accountability and personal responsibility to achieve the aims of group work**
  Students learn together so that they can subsequently perform more effectively as individuals through cooperative learning. To ensure that each member of the group develops, students are made individually responsible to carry out do their share of work.

Common ways to structure individual accountability include:

(a) giving an individual test to each student,

(b) randomly selecting students to present their work orally to the group or to the class,

(c) observing each group and recording the frequency with which each member contributes to the group's work.

- **Use of relevant interpersonal and social skills**
  Students must be taught social skills for high quality cooperation and be motivated to use them. Leadership, decision-making, trust

building, communication, and conflict-management skills have to be taught just as purposefully and precisely as academic skills.

- **Handing (keeping) out of the group to improve its future effectiveness**
  Group processing exists when group members (students) discuss how well they are achieving their goals and maintain effective working relationships. Such processing:

  (a) enables learning groups to focus on group maintenance,

  (b) facilitates the learning of social skills,

  (c) ensures that students receive feedback on their participation, and

  (d) reminds students to practice collaborative skills consistently.

Thus, in cooperative learning, the student groups have to be structured and managed by the teacher. There is a pattern to classroom learning. First, students gain knowledge, skills, strategies or procedures in a cooperative group. Second, students apply the knowledge or perform the skills, strategies or procedures alone to demonstrate their personal mastery. Students learn together and then perform fast alone.

Due to the modernizing of geography curriculum, teaching-learning activities as well as teaching learning resources will change. Therefore, new textbooks and teachers' guides should be produced. The contents of the proposed syllabi for Grades 10-11 and 12-13, production of TBs and TGs, teacher training and infrastructure facilities, the students can develop their knowledge more through a cooperative group than through individual learning.

Recommendation 6: *Teaching strategies must ensure greater student participation (mass learning) in the learning process, empowering students in learning to learn. Mass teaching procedures reach many students. In mass teaching procedure, the teacher does not have direct contact, but these methods can used to teach more effectively.*

As mentioned in Recommendation 6, teaching strategies must ensure greater student participation (mass learning) in the learning process, empowering students in learning to learn more effectively. Mass teaching procedure can apply to larger classes with mechanical aids, and less personal contact overwhelm rather than

stimulate the student (Archive article, 1959). Consequently, a teacher's main duty is to help people learn and put what they learn into practice. A good teacher finds ways to provide information and new ideas so that the students will want to learn and will get satisfaction from learning. The Teacher is the key person in the school system in the learning process, ensuring maximum participation of students. Therefore, teachers need to make their work more interesting and appealing to students. For this purpose, different methods of teaching are necessary to maintain students' interest and develop their desire for further learning. This means that teaching strategies must ensure more student participation in the learning process, empowering students, encouraging them in learning to learn. Student satisfaction should be the ultimate outcome of the teacher strategy.

STEP I. Getting the attention of the learner

In classrooms, some students are not always able to learn Geography as with other subject. The students may be able to hear the words spoken by the teacher, but they may not really understand them. For example, during the lessons on projections in Practical Geography, some students will be slow learners. The teacher could begin the teaching by drowing attention to this problem, helping them realize the various methods of preparing a flat map of the earth's surface known as projections which are classified as geometric or analytic, depending on the technique of development and represent distortions of areas, distances, and direction. For this purpose group teaching is more effective when it focus on practical examples. For example through the removing of the peel of an orange, students can understand the connection of globes to maps (Manson, 1989).

STEP II. Getting the learner's interest.

Students are very keen to look at posters and exhibits. On the basis of this they often start asking questions. Poster and exhibits are useful aids for teachers about environmental issues and their influence, conservation, remedial measures and comparisons between regions etc. Similarly, a topic such as the Solar System and its features, planet earth and its dynamism, different levels of the tides and their influence etc. can be supported by such media.

STEP III. Arousing the learner's desire for information.

Many of the students in the class want to know more about certain topics , for example "thunder and lighting" or "Savanna Forest". If it is possible to use multimedia facilities (CDs, videos etc.) in such a lesson, the students can see real life situations. Moreover, in a lesson on savanna vegetation, the student can more readily understand the physiographic conditions, climatic conditions, distribution and thickness of the plant species, wildlife etc. in a group-based exercise. Such a method is useful to ensure student participation in the lesson.

STEP IV. Convincing the learners to act.

Students may feel that former lessons were a waste of time as they spent the time merely note-taking. They are not quite ready to spend time to following the same procedure. For such lessons, field visits, exhibitions of models, photographs, images etc. are necessary to convince the students of the more practical aspects.

STEP V - Teaching the learners what to do.

Teachers must know what to do and develop the students' skills to achieve objectives of the teaching strategies. For this purpose, more student participation in the learning process is required. Learning material and methods are significant to ensure that students learn to learn.

STEP VI. Making certain that learners receive satisfaction from their action.

The teacher can check student progress in the development of knowledge and skills through assessing the satisfaction derived by the students. Thus, the geography teachers have a role in ensuring learners' attention and satisfaction.

The teacher should be sensitive to the development of ideas and opinions in students. Accordingly, the teacher can provide plenty of opportunities for students to express their ideas, whether in small groups or in the class as a whole. The teacher should be a facilitator and a guide to students and should also learn along with the students. All students need guidance and help to link their current experiences to existing ideas as they attempt to generate meaning.

As a guide and a facilitator the teacher should provide students with numerous examples and application new concepts, presenting material in several different ways and formats, and encouraging students to construct tables, flow-charts, draw inferences and make summaries as they absorb information. Students can be encouraged to make and check predictions based on their 'new' cognitive constructions.

The Following should be included in the preparation each unit of the teacher's guide:

- Objectives of the unit.
- Students' learning outcomes.
- Proposed teaching methodology
- Student activities to achieve the student learning outcomes.
- Optional activities for higher ability students.
- Teaching-learning resources.
- Management of allocated teaching time.
- Additional notes for the teachers.

- Suggestions for assessment procedures (National Level Examination and SBA)

4.3 COMMON RECOMMENDATIONS RELEVANT TO GRADES 11 - 13 (GCE OL & AL)

Recommendation 7: *Assessment procedures should be improved in accordance with proposed modernized curricula. Possible assessment modalities, such oral tests, written tests, assignments and project work, should be covered by SBA rather than the National Examination.*

The assessment procedure for GCE OL (revised and modernized) can be improved in terms of National Level Examination and SBA. The core subject content and activities during a two year period will be tested at the GCE (OL) National Examination. The core content as well as students' core activities and extended or optional activities will be evaluated through school-based assessment. Likewise, the final GCE OL National Examination should consist of two papers:

Paper 1 - Compulsory paper consisting of 50 Multiple Choice Type Questions. This should be a one hour paper and carrying a maximum of 100 marks.

Paper 2 - Selective paper consisting of 07 Structured Type Questions, out of which, Question One is a compulsory question on Map reading and Map marking. 25 marks will be allocated for Map reading and construction and 15 marks for map marking. Another 3 questions to be selected from the remaining 6 questions and 60 marks (20 marks for each) will be allocated. Finally, at the Grading, total marks for the Geography subject will be 100.

In relating to the GCE AL, two examination papers proposed instead of the present three examination papers. For the development of skills and competencies of the Geography students, practical work is compulsory. Accordingly, maps and globes are used in geography education as standered tools. Through these means, one can locate and compare places anywhere in the world. Similarly, using tables and graphs, it is possible to compare facts and statistics about the people and places we study. In addition diagrams, photographs and images are also tools for studying geography. Through these, it is possible to discover facts about the Earth that might be difficult to understand without the aid of pictures (Manson, 1989). All these emphasize that every geography student must be able to use maps, tables, graphs, diagrams, photographs and images in order to understand the world. Therefore, the student needs to learn map reading, analyzing, understanding and application skills as well as constructing maps.

In the present assessment systems for the Geography Paper I the skills required are mainly: drawing and constructing maps, projections, graphs and diagram, Very little

attention has been paid to applying this ability after leaving school. Past pass rates and Geography students in the GCE A/L examination reveal that only 3 – 4% of geography students enter University. The remainder search employment or enter Vocational Training Centres and different types of Technical Training Colleges as well as National Colleges of Education. Therefor, the cartographic knowledge obtained by standing geography will be useful to all students.

Emphasizing students' skill development, competencies and employability and dealing with the imbalance of the existing geography curriculum, the contents of the Geography Paper I (Practical Geography) can be incorporated into Paper II and Paper III. Therefore map reading, analyzing, understanding and application skills can be evaluated by SBA as well as by the GCE AL National Examination based on structured questions. Moreover, reading and construction of physical and cultural features of 1:50000 topographic maps should be included in proposed Geography I (Physical Environment) and Geography II (People & Human Geography).

The time allocation is 3 (three) hours for one paper, and again Part 1 of Paper 1 will be a Compulsory Paper consisting of 25 or 50 Multiple Choice questions. This should be a one hour paper with a maximum 100 marks. Part II of Paper 2 is consisting of 07 structured type of questions, out of which, Question One should be compulsory on map reading/construction (physical features) 40 marks will be allocated for map reading and construction. Further 3 questions are to be selected from the remaining 6 questions and 60 marks (20 marks for each) will be allocated to these. The same process should follow the Paper II, and the compulsory question of Part II of Paper II should be map reading and construction (cultural features).

The SBA for both levels should be determined and coordinated by a well organized committee consisting of MoE, NIE, NETS, ISAs, resources persons, geography teachers and outside experts. At this stage, aassessment modality, teaching-learning aspects and significant linkages with basic competencies need to be considered (Annex 12).

Recommendation 8: L*earning materials in Geography for OL and AL should enable students to learn on their own with minimum help from the teacher*.

A well-designed, comprehensive textbook is the most important resource for learning Geography. In addition to text books, practical books, workbooks and other supplementary reading (additional texts) materials should be made available to students. A useful textbook should include student activities, investigations, assignments, extension activities, questions, worked examples, self-check questions, map marking or map reading, progress tests with answers, guidelines and references for further studies. None of these are present in the current Geography AL Text Books.

The new O/L student textbooks for Geography should be prepared to suit the modernized syllabus. The existing map exercise book, published by EPD is of very low quality. A new map exercise book is needed for the new syllabus

In the 2001 geography examinations, Tamil speaking students made up 16.47% of the OL and 23.53% of the GCE AL candidates. Therefore, it is a national requirement to translate all textbooks, syllabi, teachers guides and other relevant information and material in to Tamil. Likewise, students and teachers should be encouraged to use the available English language Geography textbooks, and also to gather relevant, updated, information from other resources such as print media (newspapers, magazines and periodicals), Internet and e-mail.

The National Institute of Education should be responsible for developing the curricula. The subject teams of NIE will identify the scope, objectives, content, methodology and evaluation related to each subject. Expert guidance and advice must be obtained from experienced practicing teachers, principals, subject specialists from educational institutions, universities, representatives from the community and employers.

4.4 COMPUTER ASSISTED LEARNING (CAL)

In education, Computers are used, in developed countries often, as a tool for learning and teaching . Computer simulations and modeling tools are now available for many different school subjects providing learning environments to stimulate student learning. Computer simulation can be a representation of a real world situation, which a learner can experiment in ways not feasible in the real world.

Recommendation 9: *Encourage students and teachers to use computers as an educational tool for learning and teaching in schools where such opportunities have been provided.*

There are over 1000 CLCs to be established during the SEMP I (by 2005) & SEMP II (proposed for 2005 – 2009). GEP 2 and JICA are also help to increase the CLCs for many Secondary Schools. The CLCs are to be used for the CAL applications among the students and teachers. The main attraction of CAL for education is the direct interaction between the user and software. It is an active, rather than a passive resource. Computers also provide an instantaneous response to students answers, and allow students to proceed at their own pace. CAL can be used for programmed learning, in which each part of content can be treated independently; consequently there is an opportunity for reinforcement at each stage for the learner. This also helps the process of learning by discovery, gradually unveiling the key or central concepts during the learning operation. The use of computer simulations is one facility that supports this type of learning. The computer may assist the student's articulation and testing of his or her own ideas and hypotheses. The student has the opportunity not only for the self evaluation, but also to develop his or her own knowledge clear misconceptions etc (Fernando, 2003).

User-friendly CAL packages for example Encarta, Britannica encyclopedia, Nature, Geography etc. can be used to cover every theme of the modernized Geography curricula for Grades 10-13. Similarly, the software produced by CEA, Audio Visual Source on Earth Science, Ecology, Environmental Studies, Geography, Human Resources and Space Science can serve as exciting educational tools for teachers and students alike. Some useful packages for geography and human resources (digital curriculum) in the market are available on following topics:

Climate, landscapes and life: the tropics
Clouds and Patterns of the weather
Exploring Science Series: Exploring Geology
Rivers: Shapers of Earth Landscapes
Rocks and Minerals
Waves, Tides and the Coastal Environment
The solar System: Our Neighbors in Space
School Teacher
The Making of an officer
Learning Geographical Terms
Maps: Symbols and Terms
South Asia
Living Soil
Photosynthesis
the Wetlands.

At oresent CEA has published 10 student-friendly software, which cover a numbers of topics GCE OL and AL geography syllabi.

Soil erosion and conservation
Your surroundings
Urban environmental problems
Environmental health
Water and its properties
Industrial pollution and environment
Recycling
Pest usage and control
Natural disasters in Sri Lanka

User-friendly software for map work also can be used to construct contour maps, relief maps, plans, graphs, tables and diagrams. Examples of such software are GIS such as Arc View, and packages such as Adobe Photoshop.

However, there are certain drawbacks to the implementation of CAL in the school system. Computers are generally costly to purchase, maintain and update. Some mechanism must be developed by the school management, in collaboration with the Zonal Education Authorities, to meet the costs of maintaining and updating the computers. Furthermore, the authorities of SEMP, GEP 2, JICA, MoE, PEO and

NGOs should provide necessary infrastructure to remote and disadvantaged areas that CAL can also be made available in those areas.

Recommendation 10: *Training at Environmental Field Study Centres (EFSCs) should not be limited only to science students and teachers. The activities should be extended to geography students as well as other students.*

In Sri Lanka, there are 36 Environmental Field Centres (EFCs). Of these, I visited ten centres with two Environmental Specialists to ascertain the purpose and objectives of the establishments, the types of activities conducted, and how these might be used in geography education.

The ten centres visited are located at the northwestern (Madampe Central college and Kurunegala Maliyadewa Model School), north-central (Kekirawa Central College and Polonnaruwa Royal College), Uwa (Bibila Central College), southern (Puwakdandawa Balika Vidyalaya and Balapitiya Siddartha Central College) and central (Nildandahinna Sri Sumangala MV and Peradeneya Central College) provinces. These on-site EFSCs are in geographically varied sites (Table 4.1).

All Centres visited (see Table 4.1) differ climatologically, geologically and geomorphologically. Living organisms (biotic factors) and nonliving variables (abiotic factors) such as temperature, rainfall, wind etc. have been responsible for the particular ecosystem in each site. Likewise, these Centers and field study sites clearly emphasize location, society-land relations and regional variation, all of which are important topics in geography.

According the circular 2003/21, the EFCs are limited to promoting science education. The administrative body of the centre is also mainly science-based. Day Programmes for junior secondary school students (Grades 6-11) and residential programmes for AL students are given only to science studies. For this purpose, director of Education (Science and Technology) has sent packages of science equipment to the relevant centres.

The above centres could so serve geography students in developing their knowledge and skills relating to **core topics** such as rocks and minerals, landforms, atmospheric phenomena, natural vegetation and wildlife, economic activities, natural and cultural heritage sites, environmental degradation and environmental management etc.

Similarly, the EFCs can help other students to develop their skills, knowledge and competencies in History and Archaeology, social-cultural and economic changes, as well as emphasizing socio-economic surveys. Due to lack of proper teacher training programmes over the past three decades, teching-learning methodologies and activities are not effective, and EFCs could be used as Resource Centres to undertake environmental education residential workshops for the geography teachers.

TABLE 4.1 VISITED ON-SITE ENVIRONMENTAL FIELD CENTRES

District	Name of school	On-site Field Centers	Terrain & landform	Climatic zone
Puttalam	Madampe MMV	Madampe-Chilaw lagoon, mangrove vegetation	Coastal plain & wetlands	Dry zone
Kurunegala	Maliyadewa MS	Etugala Urban Forest	Lower levels of intermediate mid-lands (dissected)	Intermediate Zone
Anuradhapura	Kekirawa MMV	Ritigala Reservation, Walawawewa, Nikiniyawa	Low undulating	Dry Zone
Polonnaruwa	Royal College	Angamedilla forest , Parakrama Samudraya	Lower levels of intermediate mid-lands (dissected)	Dry Zone
Monaragala	Bibila (Wellassa)	Nilgala Forest	Steeply dissected	Dry Zone
Kegalle	Kegalu MV	Kurulukele Urban Forest	Intermediate mid-lands	Wet Zone
Hambantota	Beliatta BMV	Rekawa Lagoon	Undulating & coastal lowlands, wetlands)	Dry Zone
Galle	Balapitiya Siddartha MMV	Maduganga Islands	Coastal lowlands & wetlands	Wet Zone
Nuwara Eliya	Nildandahinna Sri Sumangala	Forest Resevation	Dissected highlands	Wet Zone
Kandy	Peradeneiya	Gannoruwa Forest and Mahaweli River	Transitional highlands	Wet Zone

5.

IMPLEMENTATION OF THE MODERNIZED CURRICULUM

5.1 NECESSITY OF IMPLEMENTATION

The implementation of the new curriculum will be the responsibility of the Ministry of Education. Before the implementation procedure of the new curriculum, a number of steps need to be fulfilled. To complete this procedure, it will take at least two-years (Annexes 9 and 10). However, the ultimate responsibility belongs to the teachers. For this purpose, it is the responsibility of the curriculum developers and other relevant authorities to educate the teachers on the main constituents of the curriculum, e.g. aims, objectives, methods of teaching, learning resources, assessment etc.

Due to the failure to educate teachers, delays in the supply of necessary equipment and resources, and neglect of the academic environment, the whole exercise of developing the curriculum could fail. During the past 35 years, this has happened to the Geography Subject in general education of Sri Lanka. This created immense problems for Geography teachers and geography students who do not reach the expected levels of achievement.

Recommendation 11: *Remedial measures are needed to develop the proper teaching training programmes, minimize the mismanagement in the school system.*

The following are some of the negative aspects in the implementation of the Geography Subject Social Sciences, as an additional subject in Grades 10-11, and as a core subject in Grades 12-13:

- In-service training in Geography is completely inadequate and neglected. In-service advisors are sometimes not qualified in the subject.

- The teachers are not adequately trained and are not aware of the aims, and objectives, methods of teaching, learning resources and assessment of the curriculum. As a result, teachers determine their own ways and means to educate their students.

- The numbers in a Geography class are not large. In most schools, this varies between 5 – 30 students. This size is suitable for teachers to

organize activity based teaching methods, but 95% of the school system still follows the dictation (taking notes) approach to teaching.

- There is currently no proper effective monitoring system to investigate feedback on the teachers performance and student' satisfaction.

- Basic resources such as globes, topographic maps, world maps, school atlases, measuring instruments, etc., are very sparsely distributed among rural and disadvantaged schools. Additionally, in that areas trained IASs and grassroots level teachers are minimal.

Some material and financial support have been provided to principals in order to support the delivery of the National level Geography Syllabus, but A-level teachers often do not teach using the material given, because of lack of awareness and knowledge of them and due to the lack of co ordinations among the PMoE, ZEO and the debility of SBM. Some teachers currently guess the A-level questions that will appear in the forthcoming examination, and forget their teaching accordingly. Many students will then get "A" or "B" grades, but no development of skills and competencies to such students. Teachers should realize that partial coverage of the syllabus many influence the progress of students after they leave school.

To improve the quality of the A-level geography teachers and their teaching, it will be necessary to identify a group of resource persons from experienced teachers and train them appropriately. Such training is needed to towards based on pedagogic requirements for changing the attitudes and aptitudes of the teachers. The in-service trained teacher can identify social and physical differences of students and develop the skills and competencies as well as the guidance and counseling of the students. Additionally, such a group can be used to educate and monitor the other teachers.

Geography is an additional subject for the O-level since 2001. Before this time, Geography was integrated into Social Studies. As a single subject, Geography will be introduced again to the Junior Secondary School Curriculum (Grades 7-9) from 2005, and the services of In-service Advisers are required to support this. The ISAs will be required to assign their entire time to the professional development of their colleagues.

Recommendation 12: *Secondary School Geography teachers should be involved in giving the students assessment feedback frequently and guiding the students in self-assessment and peer-assessment.*

In self-assessment, each trainee assesses his or her own performance. At the beginning of a new course, the students may not yet have adequate knowledge to

assess themselves. However, after they have qualified to a certain extent, they should be able to work with very little supervision. This is good practice because later on they also have to assess their own performance in their learning.

In self-assessment, students need clear guidelines on what standards are required. They must also be given a very clear idea of the tasks. It should be noted that the aim of self-assessment is to learn and not to score points. There is thus no problem of cheating. An alternative to self-assessment is peer-assessment. This means that the students assess each other. It is a very good method of helping trainees to learn.

The teacher can give written instructions on an assessment. One of the students then tries to do the lesson while the other one watches and comments. At the end, the students change roles and the second student does the job while being watched by the first one. This method is very useful, for example for teaching about rice production, working on sand mining or other practical skills.

5.2 Teachers Capacity Building Measures

Since the education reform in 1972, teacher training for the Geography Subject has been completely neglected. Since the integration of Geography into Social Studies, teacher training in Geography was gradually decreased. The reasons for this were annual retirement of trained teachers, abatement of new recruitments for geography teaching and, no regular in-service or other training conducted by the NIE or MoE. Moreover, geography was neither compulsory nor an additional course in the National Colleges of Education. A small Geography component can be seen in the Social Studies course content at Ruwanpura NCE, but this is not sufficient to produce geography teachers.

It is necessary to revise the teacher training program drastically at NCEs and should be introduced student-centred activity-based, and skill and competency development based courses as early as possible for the Geography Subject. For this purpose, a very strong coordination is required between MoE, NIE and NCEs. At present, the MoE has taken a policy dissection to introduce three subjects: Geography, History and Civics (Civics Education) replacing the current Social Studies subject discipline. Therefore, this gap need to be will filled considering as a national requirement.

Recommendation 13: *A secondary School teacher of Geography should be involved in some activities to educate and guide the students to develop their skills.*

A secondary School teacher of Geography should be involved in teaching, guiding and counseling of many activities to educate and develop their skills and competencies. Accordingly, he or she:

- prepares and gives lessons in Geography. Usually plans lessons according to a syllabus.
- uses textbooks, practical work, discussions and field trips as teaching aids. Also uses maps, diagrams and other visual aids to illustrate lessons.
- prepares materials such as handouts and tests.
- organises and directs study, but also encourages pupils to discover facts for themselves. Gives individual help to pupils as required.
- sets projects, assignments, tests and exams. Carries out continuous assessment, evaluate this and writes reports on progress.
- prepares students for examinations.
- maintains discipline in the classroom.
- prepares for and attends parent-teacher evenings and staff meetings.
- keeps a register of pupils and is usually involved in other general administration.
- supervises out-of-hours activities such as field trips, social events and other skill development activities.

Thus, secondary school teachers of Geography work mainly in the classroom. They work away from school when on field trips and educational visits. They mostly work with young students, although they also deal with colleagues and parents. School hours are 8.00 am to 2.00 pm. Additional time spent on preparation, marking and paperwork. Geography teachers are also required to attend out-of-hours activities such as parent-teacher meetings. But in Sri Lanka, there is no such approach to teaching may seem difficult to the teacher. It requires a different kind of planning and organization than that required in traditional classroom teaching. It may seem even more difficult where there is a scarcity of teaching materials, for example maps, globes, example kits etc., and resources for field trips as well as proper teacher training.

Recommendation 14: *Ongoing teacher training programs should be developed to improve the quality and professional slandered of geography teachers. Through this, the trained teacher will be able to: (a) use different teaching strategies to promote learning and, (b) evaluate students through appropriate school based assessment procedures.*

With the modernization of the Geography Curriculum for Grades 10-13, a complete training programme for resource persons and teachers, who are working in Geography education has to be commenced and carried out by the NIE, in

collaboration with MoE, Universities and other stakeholders. Therefore, it is essential that a series of activity-based seminars and residential workshops are organized.

Teacher training programmes for In-service Advisors and A/L Resource Persons should include seminars/workshops from time to time. Accordingly:

1. A compulsory one week residential workshop/seminar should be held, where the participants are educated in the various aspects of the modernized O/L and A/L geography curricula. This workshop should focus on::

    - the content of the syllabi, teaching & learning methodologies, student activities, assessment modalities and outcomes
    - School based assessment procedures (SBA)
    - the preparation of in-service materials to improve the quality of the students
    - facilities those are available for students and teachers, example. EFSCs, CLCs etc.

    It is highly necessary to instruct the participants to cover the two- year course of the O/L and A/L syllabi.

2. A two-day compulsory workshop should be held in every school term to review, discuss and modify teaching and learning methodologies, student activities, assessment modalities, outcomes etc., to prepare for the forthcoming school term.

3. Compulsory training programmes for O/L and A/L geography teachers are to be carried out. At these workshops/seminars to be held in school vacations:

- curriculum components designed for that term
- objectives of the themes to be taught that term
- learning-teaching processes and methodologies
- use of teaching aids/materials
- student learning outcomes (skill development and competencies)
- assessment, including SBA
- facilities that are available for students and teachers, example EFSCs, CLCs etc.

For this purpose, a one week training programme is required. At least six such workshops are recommended island wide to cover the two-year Geography course of the syllabi. Apart from the above, a series of two-day compulsory seminars/workshops preferably during week-ends should be organized to review, discuss and modify the teaching methods as well as student-centred activities. These training programs should include preparation of teaching manuals and materials,

use of cost effective resources for practical student activities, as well as procedures for SBA. Furthermore, in these training programmes, it is necessary to discuss the issues, problems and constraints to be faced. Among the constraints are obtaining of teaching material from the school management[2], taking students outside the school for fieldwork, improper arrangement of timetables by the school management.

For O/L teachers, these workshops/seminars can be organized in the Zones, and for A/L teachers, District-wise under the direction of NIE curriculum experts.

In addition to the training of ISAs and A/L Resource Persons for both levels the modernized Geography curricula, a number of additional awareness programmes should be conducted by NIE to educate the other stakeholders:

(a) Officers of the MoE, NETS and EPD
(b) Principals/directors and Lecturers of Teachers Colleges and Colleges of Education.
(c) Managers of Teachers Centres
(d) Zonal and District Education Officers
(e) Principals of Schools
(f) School assistants in the principal's office
(g) Parents, and the public.

5.3 Facilities and required Resources

The Geography curriculum involves a special way of looking at the planet Earth and its people. It looks at relationships between groups of people, between places, and between people and places. To support this facilities and equipment are needed for student-centred learning, skill development and for teachers' knowledge. The curriculum developers must consider the whole that teaching-learning process, learning activities, etc., other than the teaching aids are necessary for specific topics.

For successful geography education programme in secondary education in Sri Lanka, it is necessary to educate teachers on cartographic techniques. At present, there is no separate unit to complete this requirement at NCEs or at NIE. Although, graduate teachers had followed a cartographic course at their University degree programme (for the geography subject), they have no been given any opportunity a minimum chance to develop their practical application skills after graduation.

[3] In many schools, it is very difficult to obtain globes, maps etc. from the principal's office for the allocated time of the timetable. Most of the materials that are needed to geography teacher cannot bring to the classroom due to this restriction.

Recommendations 15: *Well-equipped cartographic laboratory should be established to educate secondary school teachers*

Likewise, there are two Education Faculties at Colombo University and Open University and an Education Department at Peradeniya University, but geography as a subject is not offered in these places. Therefore, it is not possible to educate non-graduate geography teachers at the universities. Hence, a well-equipped cartographic unit should be established at NIE to train such teachers and for further training of graduate geography teachers. This unit should be equipped by GIS facilities (ArcView user friendly packages), aerial photographs, stereoscopes (pockets and mirror), topographic maps, globes, thematic maps, measuring tapes, compasses etc.

Recommendations 16: *Existing Geography syllabus in B.Ed. Degree Programme at NIE should be revised to train teachers in order to meet goals and objectives of the modernized Geography curriculum and to develop the Geography education.*

At present, a three-year degree programme (B.Ed) for non-graduate teachers is conducting at NIE. To complete this programme, students need to take three subjects. Although, Geography appears as one subject in the subject list, the syllabi should be revised and recognized a General Degree level of the Universities. For this purpose, existing syllabi in internal and external degree programmes take into consideration and necessary assistance and guidance should be obtained from the Universities.

For first year in this degree programme, all units should be related to education, including education psychology, counseling and carrier guidance, the concepts of skill and competencies development etc. A student, who takes Geography as a subject from second year, three compulsory papers should be introduced, namely Physical Geography, Human Geography and Cartography, and again for the third year three papers should be introduced relating to physical and human geography, example Physical Geography and development, Economic Geography, Application geography education for skill and competencies development etc. Thus, this B.Ed. degree programme will help cover the Grades 10-13 syllabi and to promote modernized Geography curriculum (present study under the SEMP 1).

As emphasized in Recommendations 11, Environmental Field Studies Centres can use as resource centres teaching and learning of geography. These centres provide facilities for the students to study environmental phenomena as well as the socio-cultural environment in surrounding areas. These centres can also be used to conduct environmental awareness programmes for geography teaches at Zonal Level. As resource centres, they also provide opportunities for students and teachers to work

with scientists, experts and others to promote encourage the developmental supportive and enriched teaching-learning environment that will foster the students skills and competencies in investigation, decision making and problem solving.

Recommendations 17: *A common (mini) laboratory is needed to promote Geography Education. Use of a laboratory as a resource for teachers and learning geography, it will enhance practical application knowledge and skills.*

The Grade 10-11 curriculum will comprise eight subjects including Science, Geography and Design Technology since 2005. The subject Design Technology consists of eight disciplines including Agriculture and Food Technology and Home Economics. The subject of Physical Geography is concerned with Atmosphere, Hydrosphere, Lithosphere and Biosphere (Figure 1.1). To understand the complexity and concepts in physical geographical topics and sub topics of the Theme 1 or and Theme 4 of the modernized curriculum helps students to develop their practical knowledge and skills. A mini Practical Laboratory would support this. At present, many schools possess science laboratories. However, the use of school science laboratory as a resource for learning science, geography students and teachers have not permitted to use for their lessons. Therefore, it should be expanding to geography education, because these students are learning science based geography themes in Grade 10-11. Consequently, a common mini laboratory is recommended with basic equipment for science, geography and agriculture students, which could be also be used to promote environmental education at secondary school level in Sri Lanka. Such a laboratory will help students to:

- understand complex and abstract concepts in science
- participate in actual investigations, employing and developing skills as an essential component of learning science as inquiry
- ideentify, diagnose and rectify their misunderstandings
- enjoy activities and practical work, when they are offered and given a chance to meaningful and non-trivial experiences, and they become motivated and interested in learning geography and science-based subjects.

Taking into consideration the above requirement, it is essential that a common school laboratory should be supplied with all the requisite facilities, such as space, furniture, water, gas, electricity, laboratory equipment, chemicals, and storage as well as a laboratory technician. The attached list of equipment, which is prepared for the Environmental Education Specialist (Hamari 2004, Annex 5.1) is suitable for such a laboratory. The resource laboratory could be used by geography, science and agriculture students. Preparation of equipment, apparatus and chemicals in time for the practical class, collecting, checking and storing after the practical lessons, and cleaning and maintenance of the equipment and the laboratory would be the main responsibilities of the laboratory technician.

In the proposed Grade 12-13 Geography syllabus, there are also practical work and application have been included. The modernized Grade 12-13 geography syllabus (Geography 1 – Physical Geography) includes five themes, namely; Planet Earth, Landforms, Rocks and Soils, Weather & Climate, Hydrosphere and Global Ecosystems require laboratory and practical work (Annex 5, see the extended contents).

5.4 Institutional Development

In order to attain the goals of SEMP, we must improve the O/L and A/L student skills, competencies and increase the pass rates. For this purpose, well-organized coordination is required among the institutions of MoE, NIE, NETS and EPD, and changes to the evaluation/assessment system are necessary.

Recommendation 18: T*he improvement of the Geography curricula requires the training of geography education specialist (who are not teachers) in respective disciplines with sound educational background. These specialists should be competent and confident enough to guide and lead the curriculum development team of the geography subject.*

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Responsible Institution of the quality improvement for the modernized Geography curricula is NIE. Accordingly, the design and development of the Geography syllabi, preparation of teacher's guides and resource materials for teaching-learning process, organizing and conducting teacher training programmes and other capacity building measures should be developed by the NIE officers. At present, there are staff at NIE for Geography (two for Sinhala medium and one for Tamil medium). This is not sufficient to deal with the additional workload on top of other activities.

The same NIE staffs (three persons) cover the Geography, History and Civics Education curricula, and organize the different seminars/workshops. In addition to the above, these officers hold in and outdoors meetings, seminar and workshops. The number of officers should be increased and existing officers should be trained further. The training of the present officers is mainly related to Social Studies and does not provide sufficient training in Geography. From 2005, the geography will be taught from Grades 7-13. This will be a good for the subject, but means that coordination is required among all of the relevant institutions.

With the improvement of the Geography subject curricula, it is very important that the geography education specialist to train in order to continue respective disciplines. These specialists should be competent and confident enough to guide and lead the geography curriculum development team of the geography subject. For

the training academic and professional level specialist or specialists, following proposals are made for NIE.

- Recruit two more Geography graduates (Special Degree) with first or second-class upper-division in the respective disciplines. Practicing teachers are also preferred.

- Provide the staff with the opportunity to complete a Masters Degree (two year) in Geography education at a respectable foreign university within one year of recruitment.

- After serving a three-year period, an opportunity should be given to at least one officer to read for a Doctorate in Geography Education.

Reading M.Sc./Ph.D. Degree will produce specialists with subject knowledge as well as the professional competency.

Recommendation 19. *Coordination within the MoE (responsible officers in the various branches), and between MoE and NEC, NIE, EPD, NCE, PEO and ZEO are precisely weak. Without their strengthen coordination, the modernized subjects curricula are unable to implement, evaluate and monitor.*

Modernizing curricula, implementing and monitoring their delivery are not responsibility of a single institution. Coordination is required among institutions of MoE, NIE, NETS and EPD. The evaluation/assessment system will need to be changed the requirement of the modernized curriculum. Presently, the coordination among responsible officers in the various branches of MoE, and between MoE and NEC, NIE, EPD, NCE, PEO and ZEO are precisely appear as individual effort.

It is clear that the delays and time wasting of preparation of Teachers' Guide, Textbooks for the geography education are weak. Similarly, time-consuming distribution of textbooks and other material, financial waste and constraints, lack of communication among the divisions/units of a same institutions and between the Institutions and the MoE are significant. Without strengthened coordination and commitment, the modernized geography curriculum cannot be implemented, evaluate and monitored.

5.5 Textbooks

According to article in the "Archive Article, Encarta", 2004, more and more textbooks in Geography are produced worldwide. In response to very active demand, for more

geography in curricula of schools, the output of geography textbooks and references was likely to surpass any previous record. These textbooks are used as learning instruments used in schools and colleges for the successful completion of a learning activity, which incorporates all the essential basic content of a particular course. Thus, more and more textbooks are produced worldwide, but not in Sri Lanka, and that Sri Lanka needs more Geography textbook for the modernized curriculum. In a textbook, subject matter pertaining to the course is presented in a systematically organized form in order to facilitate the learner, example.

Recommendation 20: *To improve quality of learning, professionals should be handled writing and printing of textbooks. Institutional capacity for developing and publishing textbooks should also be improved.*

A textbook contains the assigned text for a course of study and sometimes, it represents the only teaching resource. At present, there is no generally accepted format for the Geography textbooks in Sri Lanka. However, mathematics textbooks are prepared with three distinctive features (Fernando, 2003).

1. Presentation of subject matter.
2. Worked example
3. Sets of exercises.

A student-centered textbook, should include chapter objectives, skill objectives, activities (teaching and learning), review and evaluation as a minimum.

There is no textbook for the O/L additional Geography subject. The teacher Guide for this syllabus was published in May 2004, after three and half years. Where A/L Geography is concerned Papers l, ll and lll have Teachers' Guides. However, textbooks complete only paper l, ll and a part of paper lll.

In Sri Lanka textbooks given free to students, have been prepared for grades 10 and 11 but not for grades 12 and 13. Though the preparation of the grades 10 and 11 textbooks has to be appreciated, they are not of an acceptable standard in their preparation. It is not my purpose here to highlight these deficits, but some points are very significant. In recent times, textbook production is not a national requirement, it is a business task.

To produce teachers' guides and textbooks, it is necessary to consider the syllabi as legal documents. Draft Syllabi for Grades 7-9 had not appeared as legal documents by May 2004, but textbooks for Grade 7 are in preparation under the direction of EPD without the guidelines of the NIE. Though the O/L syllabus is a legal document, the relevant authorities, especially EPD has been incapable of producing textbooks with NIE coordination by 2004.

Preparation of guidelines for textbooks for both O/Level and A/Level Geography is an effort of NIE. The following are some of guidelines, which will be used in the pr4eparation of Geography textbooks. They were compiled after careful study of the strengths and weaknesses of the existing Geography Textbooks for Grades 12-13 and other selected subjects for Grades 10-11 and foreign textbooks:

- The content given in the textbook should conform to the educational aims, aims of learning geography and the intended Geography syllabus.

- It should be written, in an accepted sequential order, as a guide to taught and supplement material.

- The style used should conform to those accepted in textbook writing and should be maintained throughout the book. Writers should remember that the style used in textbook writing is different from that used in a workbook, story or a novel.

- Geographical terminology should be in keeping with the respective age groups. It should be simple so as not to be a hindrance to students' learning. The key words used should be such that unfamiliar words are introduced only if absolutely necessary. When introduced these they should be clearly then and there.

- When terminology is introduced the same term should be used throughout even when an equivalent term is available but used in a different context.

- In geography textbooks, the use of tools such as maps, tables, graphs, diagrams, photographs, visual images and tables are essential and clear, relevant, and appropriately sized and located. For example; Geography – An Integrated Approach, David Waugh, 1994, and World Geography, People and Places – Merrill, Teacher Annotated Edition, 1989. Worked examples are an indispensable component of geography textbooks. It is important that such examples are so selected that they are the best available, simple and chosen from current and real life situations.

- Exercises, which are also an essential aspect of Geography textbooks, should be such that they are carefully selected, graded and presented in order of difficulty. Challenging problems may be given for the benefit of higher ability pupils, but they should be distinguished in some manner. In the current A/L Geography text books, there are no chapter objectives, content checks, graphical reinforcements,

remembering and understanding of facts, thinking critically and creatively, reviewing vocabulary etc.

- The size (length, breadth and thickness) of the textbook should be predetermined in relation to the age of the children and the Grade where it is used, but the textbook writing authorities should not limit the number of pages.

The Quality of printing of the Geography textbook is also very significant. The quality of the paper; accuracy of symbols and colors on geographic tools; print size and the binding, and even the cover page that makes the book attractive, readable, usable (durable) and pleasing to the eye are factors to be considered.

6.

CAREER DEVELOPMENT AND EMPLOYABILITY

Students may decide to specialize in Geography, after the learning school through either both the vocational route, through NVQ, or the academic route through A levels and degree. Geography can offer interesting employment opportunities (Beaumont, 1987). However, skills development is necessary for persons who are preparing to enter the labor force or who need training or retraining in the technology of their occupation.

Recommendation 21: *Counseling and career guidance should be monitored to students and school leavers, who are preparing to enter the labor force or who need training or retraining in the technology of their occupation.*

European Commission Development Cooperation Policy in the run-up to 2000 reveals that technical education and vocational training (TEVT) are essential to create qualified manpower needed by all sectors of the economy. In addition, TEVT offers an alternative for purely academic post-secondary studies and provides a route to self-employment in both the formal and the informal labour markets.

Relating the support given in this sub-component to the needs of the labour market is particularly important as unit cost of producing a person TEVT is normally low. For the same reason, it is essential to ensure that the kinds of skills for which training is being offered are tailored to the actual needs of employers. Support at the NDF/ADB, World Bank, JICA, NORAD etc. in this area must, therefore, be integrated into a long term strategy for technical manpower development in Sri Lanka, which will be sustainable through support of administration.

To train people to meet the needs of industry, agriculture, tourism and other users of technical skills is essential when planning curricula. Also, in-service training, such as apprenticeship schemes, upgrading programmes and extension courses should be given an equal emphasis to the pre-service training that are more commonly supported .

In view of the need to ensure that instructors in these areas have both professional qualifications and practical employment experience. Support should be made available for industry-based, agriculture-based and services-based instructor training and for the in-service training and upgrading the existing instructor cadre. This is again very useful and helpful in developing the life skills and competencies of the school leavers.

The impact of technology on occupations, the tendency of employers to demand higher educational backgrounds, and the need for employees with specialized training have made vocational preparation imperative (Brickman, 2004). Various standardized tests and inventories have been developed to measure skills, aptitudes, interests, and other abilities and traits. In addition to school records, job-shadowing techniques, computerized programs, and audiovisuals are also used to assist students with occupational selection. For this purpose, career counseling and guidance are very significant. Through career counseling and guidance, a person is better equipped to make occupational plans after determining his or her own characteristics in relation to the requirements of various occupations.

Fruehling (2004) emphasizes that in public schools, guidance programs should be are organized as a series of services. One of the services is academic planning. Counselors can assist students to select courses, and programs are also designed to help students who have academic difficulties. Student appraisal is another counseling function. Standardized tests are administered to assist in appropriate academic students of placements, assessing academic achievements, identify individual aptitudes, exploring vocational interests, and examining personal characteristics. Also, tests are used to identify gifted students and those with special learning problems.

Other counseling services include career-development programs to foster awareness of career alternatives and training in actual employment skills, as well as the acquisition and dissemination of related information. Counselors coordinate with teachers, administrators, and families in making effort to help resolve specific students' problems. Students can be referred to the physiotherapists and doctors as where there is a necessity. In colleges and universities, administrative officers such as student affairs, admissions, financial aid, housing, student health, and placement etc., provide guidance services. College counseling centers assist students with academic, vocational, or personal problems.

The proposed improved and modernized Geography curricula (grades 10 – 13) include (activity based) themes to provide school leavers, especially after the A/L, the skills and attitudes required to meet the demands of a competitive job market. By grade 12-13, students will understand the reciprocal relationship between the activities of man and the environment. The proposed Geography course helps students to develop useful skills in questioning, problem solving and decision-making. Additionally counseling and career-guidance programmes are required to help solve academic, vocational, or personal problems.

Recommendation 22: *Awareness programes should be conducted to change the negative attitude of policy makers and decision makers. It is required to develop the skills and attitudes to meet demands of the competitive labour market.*

One SEMP goal is "to provide youth leaving schooling after A/L examination, the skills and predispositions that are required to meet the demands for the competitive labour market". Accordingly, the modernized Geography curricula for grades 10-11 provide students the following advantages:

- self confidence for students to develop skills for their own job opportunities.
- skills for students entering the job market.
- examination skills for students
- vocational opportunities for the less qualified academic students

Additionally, the following aims should be addressed.

- possible job opportunities for school leavers
  - self employment opportunities
  - entry to private sector (general job opportunities)

- obtain a qualifications to admit
  - Teacher Training Colleges
  - National Colleges of Education
  - Technical Colleges
  - Professional Institutes
  - Computer Based Institutions

- obtain qualifications to enter the Universities (local and foreign)

With proper counseling and career-guidance, school leavers who study geography can fit into one of above three areas. On completion of a technical training, a vocational training or a degree programme there is a possibility of paining employment in the following areas:

- Natural resource management
- Urban and regional planning
- Human Resources Development
- Human settlement planning
- Rural Development & Poverty alleviation
- Environmental planning
- Defense
- Education and educational institutions
- Provincial Council and Municipalities etc.
- Tourism and recreation
- NGOs etc. (local and international)

As an example, the tourism industry which is one of the largest industries in world, provides an obvious outlet for NV holders in fields such as Travel and Tourism. Degree courses might lead to employment in areas such as environmental protection,

planning etc. However, it is interesting to note that the most popular areas of employment for Geography graduates are in administration and operational management together with research, design and development. All of these areas reflect and emphasis on investigation, decision making, problem solving which are qualities in Geography. To reach this level in Sri Lanka, it is necessary a awareness of programme in order to change and promote the attitudes of policy makers and decision makers.

7.

SUMMARY AND RECOMMENDATIONS

7.1 Recommendations relevant to grades 10-11 (GCE OL)

Recommendation 1: *Consider Geography as subject (as an interdisciplinary and multidisciplinary subject) offering flexibility as well as variety to meet many requirements and interests of society.*

Recommendation 2: *Include common core (must learn) subject content in the Geography Subject Curriculum, to provide basic knowledge, skills and attitudes, which enrich students to lives and work.*

Recommendation 3: *The contents of all categories of the curriculum (basic and essential) should be supported for all categories of learner. Every learner and school is unique.*

Recommendation 4: *Improve administrative and operational management, and promote research, design and development skills among the students. Greater emphasis should be given to student-centred activities such as investigating, decision making and problem solving. Such creative activities definitely help to develop the employability/working life skills of students.*

Recommendation 5: *Students should be encouraged in more cooperative learning (team work) than individual learning. Group work or collective work among students can help achieve the desired objectives of the student-centered curriculum.*

Recommendation 6: *Teaching strategies must ensure greater student participation (mass learning) in the learning process, empowering students, learning to learn. Mass teaching procedures reach many students. In mass teaching procedure, the teacher does not have direct contact, but these methods can used to teach effectively.*

7.2 Common recommendations relevant to grades 10-13 (GCE OL & AL)

Recommendation 7: *Assessment procedures should be improved in accordance with proposed modernized curricula. Possible assessment modalities, such as oral tests, written tests, assignments and project work, should be covered by SBA rather than the National Examination.*

Recommendation 8: L*earning materials in Geography for OL and AL should enable students to learn on their own with minimum help from the teacher*.

Recommendation 9: *Encourage students and teachers to use computers as an educational tool for learning and teaching in schools where such opportunities have been provided.*

Recommendation 10: *Training at Environmental Field Study Centres (EFCs) should not be limited only to science students and teachers. such activities should be extended to geography students as well as other students.*

7.3 Recommendations for modernized Geography curricula

Recommendation 11: *Remedial measures are needed to develop the proper teacher training programmes, minimize the mismanagement in the school system.*

Recommendation 12*: Secondary School Geography teachers should be involved in giving the students assessment feedback frequently and guiding the students in self-assessment and peer-assessment.*

Recommendation 13: *A secondary School teacher of Geography should be involved in activities to educate and guide the students to develop their skills.*

Recommendation 14: *Ongoing teacher training programs should be developed to improve the quality and professional standered of geography teachers. Through this, the trained teacher will be able to: (a) use different teaching strategies to promote learning and, (b) evaluate students through appropriate school-based assessment procedures.*

Recommendation 15: *Well-equipped cartographic laboratory should be established to educate secondary school teachers*

Recommendation 16: *Existing Geography syllabus in B.Ed. Degree Programme at NIE should be revised to train teachers in order to meet goals and objectives of the modernized Geography curriculum and to develop the Geography education.*

Recommendation 17: *A common (mini) laboratory is needed to promote Geography Education. Use of a laboratory as a resource for teachers and learning geography, it will enhance practical application knowledge and skills.*

Recommendation 18: *The improvement of the Geography curricula requires the training of geography education specialist (who is not teachers) in respective disciplines with sound educational background. These specialists should be competent and confident enough to guide and lead the curriculum development team of the geography subject.*

Recommendation 19. *Coordination within the MoE (responsible officers in the various branches), and between MoE and NEC, NIE, EPD, NCE, PEO and ZEO is weak. Without their strengthened coordination, the modernized subjects curricula will not be implemented, monitored and evaluated.*

Recommendation 20*: To improve quality of learning, professionals should be responsible for writing and printing of textbooks. Institutional capacity for developing and publishing textbooks should also be improved***.**

7.4 Recommendations for carrier development

Recommendation 21: *Counseling and career guidance should be promoted to students and school leavers who are preparing to enter the labor force or who need training or retraining in the technology of their occupation.*

Recommendation 22: *Awareness programmes should be conducted to change the negative attitude of policy makers and decision makers. It is required to develop the skills and attitudes to meet the demands of the competitive labour market.*

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APPENDIX 1: Details of (a) candidates sat for GCE OL and (b) GCE Al Examinations and results by Grades.
(c) Indicates the **) University applied and selected Geography**

(a) NUMBER OF CANDIDATES SAT FOR GCE OL GEOGRAPHY SUBJECTAND RESULTS BY GRADES											
YEAR	**Total Sat**	**A**	**%**	**B**	**%**	**C**	**%**	**S**	**%**	***W***	**%**
2001	**85415**	2112	**2.47**	4422	**5.18**	16106	**18.86**	26040	**30.49**	36735	**43.01**
2002	**104441**	1996	**1.91**	3859	**3.69**	14864	**14.23**	32042	**30.66**	51730	**49.51**

(b) RESULTS BY GRADES IN GEOGRAPHY SUBJECT (GCE AL EXAMINATIONS											
YEAR	**Total Sat**	**A**	**%**	**B**	**%**	**C**	**%**	**S**	**%**	***F***	**%**
1999	**36339**	467	**1.28**	2992	**8.2**	14166	**38.8**	12187	**33.4**	***6667***	***18.3***
2000	**27468**	952	**3.46**	2976	**10.83**	10925	**39.76**	9707	**35.69**	***2815***	***10.25***
2001	**23077**	1021	**4.42**	3869	**16.77**	10088	**43.71**	6893	**29.87**	***1206***	***5.23***
2002	**21086**	505	**2.40**	2726	**12.98**	7720	**36.62**	7383	**35.02**	***2749***	***13.04***
2003	**20626**	522	**2.58**	2549	**12.36**	8255	**40.02**	7388	**35.82**	***1902***	***9.22***

(c) UNIVERSITY APLIED AND SELEDTED GEOGRAOHY CANDIDATES							
YEAR	**Total Sat for GCE AL**	**A+B+ C+S**	**%**	**Applied University**	**%**	**Selected No.**	**%**
1999	**36339**	29812	**81.70**	3059	**10.26**	**1087**	**3.65**
2000	**27468**	24660	**89.75**	4972	**20.16**	**1196**	**4.85**
2001	**23077**	21871	**94.77**	3727	**17.04**	**1092**	**5.00**
2002	**21086**	18337	**86.96**	1969	**10.74**	**904**	**4.29**
2003	**20626**	18724	**90.77**	2415	**11.71**	**786**	**3.81**

APPENDIX 2:

DRAFT OF THE PROPOSED GEOGRAPHY CURRICULUM FOR GRADE 10
SUGGESTED THEMES AND TOPICS

THEME 1 – PHYSICAL ENVIRONMENT		
TOPIC	**SUB TOPIC**	**CONTENTS**
Geographical thought	What is Geography ?	• Definition • Methods of geography & Basic concepts (Location, Society & land relations, and Regional Geography)
Earth & its Physical environment	Earth as a member of the Universe	• The earth in the solar system • The earth as a "home" of human beings • Interaction of life of the Earth
	What is the physical environment	• climate, • land and water, • plant and animal life; • relationship to humans
Rocks	Type of rocks	• Formation and Types • Igneous, • Metamorphic • sedimentary
Landforms	Landmasses: Continents Islands	• Mountains • Plateaus • Plains • Rivers • Islands
	Water bodies	• Oceans • Seas • Inland water bodies
Changing earth	Endogenic Processes	• Earthquakes • Faults and folds • Volcanism • Epeirogenic movement
Dynamics of Atmosphere	Atmospheric phenomena Processes	• Weather and climate • Clouds • Thunder and lightning • Winds
	Factors	• Sunlight • Temperature • Precipitation • Humidity • Evapotranspiration • Pressure

THEME 2 – HUMAN RESOURCES		
TOPIC	**SUB TOPIC**	**CONTENTS**
What are human Resources	Society and land relations	• Natural environment and people • Peoples living in particular regions • Ecological links between the land and people
Population	Regional differentiation Population study	• Distribution of world population • Population change and density • Migration • Urban concentration
Human Resources	Human behavior and interference on it • Prejudices • Sympathies • Antipathies Human being as a complex creature	Human being as: • inventor • consumer • destroyer • victim
Human societies and cultures	Web of relationships and interactions	• Human Societies & cultures Human Differentiation • Racial • Genetic • Religious • Languages

THEME 3 - ECONOMIC ACTIVITIES		
TOPIC	**SUB TOPIC**	**CONTENTS**
Agriculture	Types of Agriculture & World distribution	• Cereal crops Paddy, wheat, millet • Farm Products Fruits, Vegetables • Animal Husbandry Cattle, Sheep and goats, Swine and Poultry
Industries	Types of Industries Tourism Construction	• Extraction Metallic & non metallic • Assemble Assembling products • Good & Services Beverages, Gold industry, Music industry • Recreation and tourism • Natural and cultural destinations • Building and bridges

THEME 4 - SRI LANKA (PHYSICAL ENVIRONMENT)		
TOPIC	**SUB TOPIC**	**CONTENTS**
Rocks	Rock & Minerals Formation and types	• Minerals quartz, mica, feldspar, hornblende and carbonates • Type of rocks and formation Igneous, metamorphic and sedimentary
Landforms	Landforms Relief & Drainage	• Central highland • Lowland Plaines • Coastal belt • Rivers and lakes
Minerals	Mineral resources Types of mineral resources	• Metallic Iron ore • non metallic Mineral sands, clay deposits, Gemstones, coral, limestone, graphite etc. • Energy
Climate	Climatic factors and Spatial differentiation	• Sunlight • Temperature • Rainfall • Humidity • Transpiration • winds
Fauna & flora	Natural vegetation: Types, spatial differentiation and associated wildlife	• Forests • Scrublands • Grassland • Mangrove swamps

THEME 5 - SRI LANKA (HUMAN RESOURCES & ECONOMIC ACTIVITIES)		
TOPIC	**SUB TOPIC**	**CONTENTS**
Human Resources	Population	• Population distribution • Male/Female • Density • Structure
Economic Activities (Types, products and spatial distribution)	Agriculture	• Food product • Agro based industrial raw material

	Industry	• Extraction Metallic & non metallic • Assemble Assembling products • Good & Services Beverages, Gold industry, Music industry • State owned & Private owned
	Animal husbandry	• Cattle/buffalos/ goats • Swine • Poultry
	Fishing	• Sea • Brackish water • Inland
	Tourism	• Development zones • Natural and cultural heritage sites
	Trade	• Internal trade & external trade • Structure of the internal trade

THEME 6- PRACTICAL GEOGRAPHY		
TOPIC	**SUB TOPIC**	**CONTENTS**
Maps	Map reading	Basic principles • Lat/longitude • Scale • Direction • Symbols • Colours
	Types of maps	• Physiographic • Climatic • Political • Economic • Satellite Imagery
	Topographic map of Sri Lanka	Reading of 1:50000 topographic maps • Lat/longitude • Scale • Direction • Symbols • Colours Types of maps • Physical • Economic & cultural

APPENDIX 3

DRAFT OF THE PROPOSED GEOGRAPHY CURRICULUM FOR GRADE 11 - SUGGESTED THEMES AND TOPICS

THEME 1 – PHYSICAL ENVIRONMENT		
TOPIC	**SUB TOPIC**	**CONTENTS**
Physical geographic environment	**REVISION (Grade 10)**	
Earth	Structure of the earth	Earth's layers & Composition • Core • Mantle • Lithosphere
Rocks	Weathering	• Physical • Chemical • Biological
Soils	Properties of soils Soil formation Composition Soil colour & soil profile Main soil types	Structure, texture, water, air, soil fauna, alkalinity, salinity • Parent material • Climate • Living organisms • Topography • Time • Horizons • Organic • Inorganic • Water • Different colours & characteristics • Tropical & sub tropical soils
Changing Earth	Landforms formation Distribution and types	Exogenic Processes Water • Rain • Running water • Waves • Currents & tides • Ice • Glaciers Winds
Dynamic Atmosphere	Changes of atmospheric phenomena	• El Nino & La Nina • Climate change • Sea level changes • Salinization • Desertification • Floods • Soil erosion

		• Catastrophic winds
Flora & fauna	Major Biomass	• Rain forest and savanna, • Mixed forest and grasslands, • Needle-leaf and mixed forests, • Steppe and desert • Relationship between biomass and climatic zones
Degradation of physical environment	Land & Water Biomass	• Causes of degradation • Natural disasters • Fauna & flora • Pollution • diminishing • Depletion & Overexploitation

THEME 2 - HUMAN RESOURCES		
TOPIC	**SUB TOPIC**	**CONTENTS**
Human population	World population growth & problems	Past and present growth Population problems • Overpopulation • Male/Female • Literacy • Poverty • Aging • Ethics

THEME 3 - ECONOMIC ACTIVITIES		
TOPIC	**SUB TOPIC**	**CONTENTS**
Agriculture	World agriculture	• Land use • Food production & population • Recent trends
Industries	World industries	• Industries & world industrial zones • Industrial production • Recent trends
Fishing	World fishing grounds	• Production • Recent trends
Travel & Tourism	World tourist destinations	• World distribution • Development Trends
Transport & Trade	Geographical distribution	• Transport roots & network • International trade
Settlements	Urban Rural	• Functions • World patterns

THEME 4 - SRI LANKA (PHYSICAL ENVIRONMENT)		
TOPIC	**SUB TOPIC**	**CONTENTS**
Landforms	Physiographic regions	• Landforms • Formative processes
Rock & minerals	Main rock series	• Highland Series • Vijayan Complex • Miocene limestone • Usage and value
	Mineral resources	• Types of mineral resources • Geographical distribution • Usage and value
	Climate & Climatic zones	• Wet zone • Dry Zone • Intermediate zone • Demarcating factors • Monsoon rhythms
	Natural vegetation	• Types of vegetation • Relationship between climatic zones and altitude
	Soil	Relationship to soil formation with • Weathering • Transportation • Deposition • Soil types

THEME 5 – SRI LANKA (HUMAN RESOURCES AND ECONOMIC ACTIVITES)		
TOPIC	**SUB TOPIC**	**CONTENTS**
Human Resources	Population	• Racial • Religious • Languages Problems • Literacy • Poverty • Aging • Ethics • Migration
Economic activities	Agriculture	• Peasant • Plantation • Farm products • Trends in agricultural production
	Industry	• Production • State owned • Private owned

		• Recent trends
	Animal husbandry	• State & Private farms • Recent trends • Problems
	Fishing	• Recent rends • Problems
	Tourism	• Natural & cultural destinations • Recent trends • Problems
	Trade	• Export & import • Recent trends • Problems
	Housing	• Types • Facilities • Recent trends • Problems
	Urban Development	• Rural and urban areas • Zoning urban areas • Rapid urbanization
Human activities and environmental impact	Impact and problems	• Migration • Urban concentration • Housing • Water supply • Deforestation • Poverty

THEME 6 - PRACTICAL GEOGRAPHY		
TOPIC	**SUB TOPIC**	**CONTENTS**
Maps	Maps of Sri Lanka	• Type of maps • Geographical significance of administrative boundary • Use of graphs • Interpretation of maps (physical, human and human)
	Topographic map of Sri Lanka (1:50000 scale)	• Interpretation of physical, human and cultural features

APPENDIX 4

PROPOSED OBJECTIVES, KEY ISSUES AND CONCEPTS, SUGGESTED LEARNING ACTIVITIES, SUGGESTED LEARNING RESOURCES, SKILLS, AND ATTITUDES FOR GRADES 10 AND 11

Theme 1	Physical Environment

01 Objectives: Student learning outcomes

At the end of the study of physical environment, the students will be able to demonstrate background knowledge of physical environment of the earth and understanding of

(i) Geography, its methods and its basic concepts
(ii) its different branches of study
(iii) the earth as a member of the solar system
(iv) the structure of the earth, its layers and composition
(v) the earth as home of human beings
(vi) interaction between life and environment of the earth
(vii) physical environment components mainly climate, land and water, plant and animal life and relationship to human
(viii) formation of rocks and types of rocks
(ix) types of weathering and weathering processes
(x) continents and islands and their salient features
(xi) the distribution and salient features of oceans, seas and worlds' inland water bodies
(xii) soil formation factors, soil properties and composition
(xiii) endogenic activities particularly plate tectonics, earthquakes and volcanism
(xiv) changing earth by exogenic processes and their distribution
(xv) epeirogenic movements
(xvi) how climatic factors combine to produce climate
(xvii) how people have changed weather and climate
(xviii) how people have changed flora and fauna
(xix) how people have degraded the physical environment
(xx) geography as an "Earth Description"

02 Key issues and concepts

- Earth and its relationship to solar system
- Earth and its physical systems
- Earth and its layers and composition
- Weathering of rocks
- Evolution of landforms
- Dynamic atmosphere and hydrosphere
- Existence of human beings as well as plant and animal life

03 Suggested learning activities

- Practical exercise to determine the nature, colours, sizes and other significant features of the earth and the solar system
- Group work/discussions to help students to learn about the relationship between Geography and Science and Technology.
- Models building to show the earth, solar system, physical environment of the earth.
- Collect newspaper items, space explorations, maps, photographs, rocks and mineral samples.
- Use of computer learning centers (CLCs)
- Use of multimedia room

04 Suggested learning resources

- Globes and maps
- Literature published by different institutions
- Software (Encyclopedias such as Encarta, Britannica, and Nature, software on Geography, Earth Science/Geology, Space Science etc.)
- Scientific exhibitions and collections
- Training workshops at environmental field study centres (EFSCs) on-site
- Data tables, photographs, paper cuttings etc
- OHP, videos and other multimedia materials

05 Skills: Student will be able to:

(i) describe the main branches of Geography and the integration of physical geography with Science and Technology
(ii) explain the composition and the structure of the earth
(iii) identify the earth as a separate body from the solar system
(iv) distinguish the different physical systems of the earth
(v) describe the factors affecting for weathering of rocks
(vi) describe the earth surface, its material and differences
(vii) identify macro level landform types and their distribution
(viii) identify the landform formative processes, landforms changes and their geographical distribution
(ix) describe the dynamic atmospheric phenomena
(x) read thermometer
(xi) identify minerals of in rocks
(xii) distinguish and describe the upwards and downwards endogenic processes of continents and oceanic areas
(xiii) understand the nature of the living world
(xiv) describe the human influence on flora and fauna
(xv) explain the courses and effects of the degradation of the physical environment
(xvi) use computers as a learning tool
(xvii) give the verbal presentations and write reports

06 Attitudes – Students will:

- think for physical environment in positive view

- realize the complexity beauty, typoon etc. of nature
- be an effective team member (group work/work as a team or cooperative work)

Theme 02	Human Resources

01 Objectives: Student learning outcomes

At the end of the study of human resources, the students will be able to demonstrate background knowledge and understanding of

(i) human resource
(ii) the environment of the earth's surface and the relationship between humans and this environment
(iii) why people live in particular regions
(iv) ecological links between the land and people
(v) human population and regional differentiation
(vi) growth of population, population past and present
(vii) worldwide problems of population
(viii) human behaviour and interference
(ix) human societies and cultures

02 Key issues and concepts

- Human societies and land relations
- Regional differentiation of population
- Population change, migration and urban concentration
- Human behaviour and influence, particularly prejudices, sympathies and antipathies
- Optimumal, over and under population
- Trends in population growth
- Rapid population growth and economic development

03 Suggested learning activities

- Arrange group work/discussions to discuss the definitions and meanings of human resources
- Conduct workshops/seminars to help and aware the students and teachers on human behaviour and interference
- Practical exercises to foster an understanding of population issues
- Use of computer learning centers (CLCs)
- Use of multimedia room
- Collection of photographs, pictures, pamphlets, tables etc.

04 Suggested learning resources

- World and regional maps (wall maps and Atlas books)
- Literature published by different institutions
- Software (Encyclopedias such as Encarta and Britannica, software on Geography and Social Studies)
- Photographs, Pictures, videos and other multimedia material
- OHP, videos and other multimedia materials

05 Skills: Student will be able to:

(i) appreciate human being as a resource
(ii) describe the society and land relations in different regions of the world
(iii) recognize the world distribution of languages and religions
(iv) describe the world distribution of child mortality and life expectancy
(v) recognize the determine urban/rural population regions
(vi) explain the human beings as an complex creature
(vii) realize the special differentiation of societies and cultures

06 Attitudes – Students will:

- be predisposed to consider population and geographical limitations
- assess human behaviour and interference
- think man as a complex creature
- appriciate the values of human societies and cultures

Theme 03	**Economic Activities**

01 Objectives: Student learning outcomes

At the end of the study the contents of economic activities, the students will be able to demonstrate background knowledge and understanding of

(i) the meaning of economic activities
(ii) types of agriculture and geographical distribution
(iii) world distribution of land use and food production
(iv) location of fishing grounds and fish production in the world
(v) types of industries and geographical distribution
(vi) main industrial zones and industrial production
(vii) development of tourism in the world
(viii) tourism related natural and cultural destinations
(ix) tourism developmental trends and their effects
(x) modes of transportation, transport roots and network
(xi) international trade and patterns in the world
(xii) settlement types and their functions

02 Key issues and concepts

- Spatial patterns of economic activities
- Factors affecting agricultural location
- Factors affecting industrial location
- Factors affecting tourism
- Tourism and human cultures
- Factors affecting transportation/trade

03 Suggested learning activities

- Group discussions and group works

- Workshops/seminars and visits to scientific exhibitions and related awareness programmes
- Use of computer learning centers (CLC)
- Use of multimedia room
- Collection of photographs and pictures on different types of human activities
- Conduct practical exercises based on collected secondary information relating to economic activities

04 Suggested learning resources

- World and regional maps
- Literature published by different institutions
- Use of software (Encyclopedias such as Encarta and Britannica, software on Geography and Social Studies)
- Economic and scientific exhibitions
- Photographs, Pictures, videos, pamphlets etc.
- OHP, videos and other multimedia materials

05 Skills: Student will be able to:

(i) recognize the different economic activities of the world
(ii) recognize the geographical distributions of different economic activities
(iii) realize the factors of location in different economic activities
(iv) recognize the courses and factors that influence differentiation of economic activities
(v) realize the types of agriculture and related products of the world
(vi) identify the types of industries and products of the world
(vii) recognize the tourism zones and their development
(viii) recognize the spatial patterns of economic activities
(ix) study the global pattern of transportation and trade

06 Attitudes – Students will:

(i) appreciate the value of different economic activities and human beings
(ii) appreciate the tension between economic activities and the physical environment
(iii) understand the need to preserve nature and the environment

Theme 4	**Sri Lanka (Physical Environment)**

01 Objectives: Student learning outcomes

At the end of the study of the physical environment of Sri Lanka, the students will be able to demonstrate background knowledge and understanding of:

(i) landforms, relief and drainage patterns
(ii) physiographic regions
(iii) types of rocks and their distribution
(iv) geological boundaries
(v) different types of minerals

(vi) distribution of mineral resources
(vii) climatic factors, spatial differentiation and their significance
(viii) climatic zones of Sri Lanka
(ix) demarcating factors of climatic zones
(x) types of vegetation, associated fauna and their distribution
(xi) climate, relief and vegetation types
(xii) formation of soils
(xiii) soil types and distribution

02 Key issues and concepts

- Geological and hydrological relationships
- Geological history
- Mineralogical differentiation
- Minerals and rocks
- Climatic factors
- Dynamic atmosphere
- Relationships between altitude, landforms, climate, fauna and flora

03 Suggested learning activities

- Practical exercise with field visits
- Group discussions, individual assignments
- Collection of rocks and mineral samples
- Use of environmental field centres (EFCs) on-site
- Use of computer learning centers (CLCs)
- Use of multimedia room
- Collection of photos and pictures in relating to key issues and concepts.

04 Suggested learning resources

- National Atlas (School Edition, Printed by Survey Department)
- Other Literature published by various institutions
- Software (Encyclopedias such as Encarta, Britannica and Nature, software on Geography, Earth Science/Geology, Ecology)
- Seminars, workshops and scientific exhibitions
- OHP, videos and other multimedia materials
- Photos, pictures, videos and pamphlets in relating to physical environment of Sri Lanka distribute by SD, MD, GSMB, CCD, NBRO etc.

05 Skills: Student will be able to:

(i) explain the relationships between landforms and drainage patterns
(ii) identify the physiographic regions and salient features of the physiographic zones
(iii) recognize the main rock series with geological boundaries
(iv) identify some essential minerals of rocks and their distribution
(v) explain the significance of the dynamic climatic conditions (rainfall, temperature and winds)
(vi) explain the types of natural vegetation with some species
(vii) Able to recognize the climatic zones

(viii) compare the relationships between climate, vegetation, animal life and altitude
(ix) describe the natural disasters (droughts, floods, landslides etc.)
(x) explain the soils and their properties and distribution

06 Attitude: Student will:

(i) appreciate the relationship among the geological structure, landforms and drainage patterns in landmass of Sri Lanka
(ii) recognize the effects of climatic conditions

Theme 05	**Sri Lanka (Human Resources & Economic Activities)**

01 Objectives: Student learning outcomes

Students will be able to demonstrate the background knowledge on human resources in Sri Lanka and understanding of

(i) human resources in Sri Lanka
(ii) natural environment and people
(iii) population (distribution, growth and density)
(iv) people and different cultures
(v) types of agriculture and main products, and their spatial distribution
(vi) types of animal husbandry and distribution
(vii) geographical distribution of sea, brackish and freshwater fishing
(viii) tourism development zones and reasons such developments
(ix) influences on the economy and culture
(x) internal and external trade
(xi) export and import patterns

02 Key issues and concepts

- Human societies and cultural relations
- Regional differentiation of population
- Distribution of economic activities and influences of location of the these activities
- Human interference
- Economic activities, inputs, processes and outputs

03 Suggested learning activities

(i) Group discussions/assignments
(ii) Debates, competitions to discuss the different aspects of the human resources
(iii) Workshops/seminars
(iv) Use the computer learning centres (CLCs)
(v) Use of multimedia rooms
(vi) Field visits (different agricultural regions, industries and industrial zones, heritage sites etc.)
(vii) Collection of photographs and pictures and samples relating to the different human activities distributed by CCD, CEA, MD, NBRO, SLTB etc.

04 Suggested learning resources

- World and regional maps
- National Atlas (School Edition, Printed by Survey Department & New Gunasena-Philips World Atlas)
- Software (Encyclopedias such as Encarta and Britannica, software on Geography and Social Studies)
- Literature published by different instruction for e.g. health, industries, pollution, tourism etc.
- Photos, Pictures and videos in relating to the human resources in Sri Lanka

05 Skills: Students will be able to:

(i) identify the geographical distribution, density, growth and structure of population
(ii) recognize societal and cultural differences
(iii) realize the type of agriculture and farm products
(iv) distinguish different types of industries and their products
(v) understand the types, products and distribution of animal husbandry
(vi) recognize the fishing categories and their geographical distribution
(vii) recognize the natural and cultural sites of heritage and their scenic and economic value
(viii) distinguish tourism development zones from other areas

06 Attitudes: Students will:

(i) appreciate the influence of human behaviour on economic growth, use of environment and sustainable development
(ii) respect different societies and cultures

Theme 06	**Practical Geography**

01 Objectives: Student learning outcomes

At the end of learning of the contents of practical geography theme, the students will be able to demonstrate basic knowledge and understanding of

(i) absolute and relative locations
(ii) different directions
(iii) different types of maps in Sri Lanka (physical and thematic)
(iv) different scales, colours and symbols
(v) map reading and use of different types of maps
(vi) relationships between graphs, tables and maps
(vii) read and use of topographic maps

02 Key issues and concepts

- Location, place and directions
- Scales and types of maps
- Properties of maps
- Map reading and analyzing

03 Suggested learning activities

- Group discussions help to understand absolute and relative locations
- Preparation of models on relief, drainage patterns etc.
- Field work (school garden & nearest environment)
- Practical exercises
- Use of computer learning centres (CLCs)
- Completing of assignments
- Collection of photographs, pictures and images of physical and cultural features

04 Suggested learning resources

(i) National Atlas (School Edition, Printed by Survey Department)
(ii) Literature published by different institutions, for e.g. Survey Department, Meteorological Department, GSMB, NBRO etc.
(iii) Graphs, photo, images etc.
(iv) Software (Encyclopedias such as Encarta and Britannica, software on Geography, Maps (Symbols and Terms) etc.)

05 Skills: Students will be able to:

(i) identify relationship between location, place and distance
(ii) read scales and directions
(iii) realize spatial distribution of physical phenomena and human activities on maps
(iv) recognize the relationship between objects and colours
(v) read and use topographic maps

06 Attitudes: Students will:

(i) consider the people, location and place from the geographer's point of view.

APPENDIX 5

DRAFT OF THE PROPOSED GEOGRAPHY SYLLABUS FOR GRADE 12 – 13: SUGGESTED THEMES AND TOPICS

GEOGRAPHY I – PHYSICAL ENVIRONMENT

PART - 1

THEME 1 – PLANET EARTH		
TOPIC	**SUBTOPIC**	**CONTENTS**
The Earth and the Solar System	**Earth as member of the Solar System** The planets	• Solar system: Origin & characteristics
	Size & the shape of the Earth	• Earth's shape • Earth's Size
	Earth's grid system	• Latitudes • Longitudes
	Earth's rotation	• Seasons, day & night
	Geosystem: Nature, structure & composition	• Atmosphere • Hydrosphere • Lithosphere • Biosphere

THEME 2 –LANDFORMS		
TOPIC	**SUBTOPIC**	**CONTENTS**
Formation of landforms: Processes and types	**Endogenic Processes** Plate tectonics	• Interior of the Earth • Earth crust
	Earth movements	• Earthquakes • Faults & Faulding
	Volcanic activity	• Intrusive • Extrusive
	Exogenic Processes Physical agents of denudation (Water, wind, glaciers, and waves and currents)	• Landforms created by running water, winds, glaciers & waves • Landforms created by solvent actions of water (karsts topography)

THEME 3 – ROCKS & SOILS		
TOPIC	**SUBTOPIC**	**CONTENTS**
Minerals and Rocks	Major rock forming minerals	• Mineral groups and types of minerals • Generalized chemical composition • Minerals founding in major rock types
	Rock types	• Igneous • Sedimentary • Metamorphic
	The Rock Cycle	• Heating & pressure, melting (magma); • crystallization, uplifting; weathering, erosion & deposition, lithification; • Metamorphism etc.
Soils	Soil forming process	• Weathering, transportation and organic activity
	Factors affecting soil development	• Parent material, Climate, Site, organisms & time
	Properties of soils	• Texture, structure, chemistry, colour, profile
	Soil conservation and management	• Soil erosion & sedimentation

PART – ll

THEME 4 – WEATHER & CLIMATE		
TOPIC	**SUBTOPIC**	**CONTENTS**
Atmospheric Systems	Global climate	Global systems of climate • Solar radiation input, • Atmospheric delivery of energy • Moisture to the earth surface

	Weather & Climate Radiation	• Solar energy input to the earth • Earth-sun relationship • The energy balance: ➢ the earth-atmospheric system ➢ at the earth surface
	Temperature	• Lapse Rates. • Temperature Inversion
	Pressure	• High pressure • Low pressure • Pressure gradient force
	Winds	• Air Stability and Instability • General circulation • Air movement. • Air masses • Depressions. • Anti-cyclones. • Winds: local and regional
	Precipitation: nature, process and characteristics	• Condensation nuclei • Dew, forest & fog • Clouds • Rain & snow • Hail
	Climate of Sri Lanka: An introduction	• Climatic year • Monsoon rhythm • Climatic zones

THEME 5 - HYDROSPHERE		
TOPIC	**SUBTOPIC**	**CONTENTS**
	The hydrologic cycle	• Global water budget ➢ Water in the atmosphere ➢ Water on the land
Water	Water in the soil	• Soil moisture • Soil dryness
	Ground water	• Aquifers & usage
	Surface water	• Runoff and stream flows • Lakes, tanks & reservoirs

PART – III

THEMES 5 – GLOBAL ECOSYSTEMS		
TOPIC	**SUBTOPIC**	**CONTENTS**
Major Ecosystems	**Types of ecosystem and their Geographical distribution**	
	Forests	• Tropical (rainforest, mixed tropical forest & shrub lands)
	Grasslands	• Tropical savanna, multitude grasslands & tundra.
	Wetlands	• Marine, brackish & freshwater wetlands
	Deserts	• Hot deserts & cold winter deserts
	Coastal	• Estuaries & lagoons, mangrove swamps, sea grass beds, coastal dunes
	Coral reefs	• Temperature, depth of sea water & water quality
Global Environmental Crisis & Issues	**Factors affecting global environ-mental change**	
	Green house effect	• Burning fossil fuels
	Depletion of Ozone Layer	• Greenhouse gasses, hydro fluorocarbons, Chlorofluorocarbons
	El Nino and La Nina	• Warm and cold phases of a cycles of ocean circulations
	Change in Ocean Circulation	• Changes of sea surface temperature

	Impact of global environmental change Global warming Climatic & sea level change. Depletion of animal populations. Disease	• Increasing of average temperature by natural processes by human activities (burning of fossil fuels) • Sea level change, salanization, • desertification, • soil erosion, • sea erosion, and • other hazards • Damage to plants and animals • Human, animal and plants health • Causes: vector born and water born
Conservation & management of Environment	Concept of sustainable ecosystems Policy and Programmes Global & Regional National Organizations Global & Regional National	• Management and conservation of various ecosystems • Conventions, protocol, agreements, seminars & workshops • Specific programmes, Acts & Legislations • IPCC, UNEP, IUCN, MAB • CEA, CCD, DWLC, FD, NARA

APPENDIX 6

PROPOSED OBJECTIVES, KEY ISSUES AND CONCEPTS, SUGGESTED LEARNING ACTIVITIES, SUGGESTED LEARNING RESOURCES, SKILLS, AND ATTITUDES

Geography Paper 1 (Physical Environment)

THEME 1	PLANET EARTH

01 Objectives: Student learning outcomes

At the end of the study of Planet Earth, the students will be able to demonstrate background knowledge on Solar System and the physical environment of the earth and understanding of

(i) the earth and other members of the Solar system
(ii) origin & characteristics
(iii) earth's shape and size
(iv) lines of latitude
(v) lines of longitude
(vi) rotations, time zones, day & night
(vii) seasons of the earth
(viii) main geosystems of the earth
(ix) nature, structure & composition in each geosystem

02 Key issues and concepts

- Planet Earth and the solar system
- Earth shape & size
- Divisions of the earth
- Rotation of the earth and its results

03 Suggested learning activities

- Practical exercise to determine the significant features of the earth and the solar system
- Group work and discussions help students to learn Space Science.
- Models building (quantitative) to show the earth, solar system, physical environment of the earth.
- Collect newspaper items on space explorations, maps and photographs
- Collect rocks and mineral sample from surrounding areas of the school and from the field
- Use of computer learning centers (CLCs)
- Use of multimedia room

04 Suggested learning resources

- Telescope and space photographs
- Globes and maps
- Literature published by different institutions, example GSMB and library

- Software (Encyclopedias such as Encarta, Britannica, and Nature
- Digital curriculum related to Geography and Space Science, example, the Solar System, Journey to the Moon, the Universe etc.
- Scientific exhibitions and collections
- Training workshops at EFCs on-site
- Data tables, photographs, paper cuttings etc
- OHP, videos and other multimedia materials

05 Skills: Student will be able to:

(i) describe the of origin solar system
(ii) name the celestial bodies (planets) of the solar system
(iii) identify the main characteristics of the earth and compare it with other planets
(iv) describe the lines of latitude and lines of longitude
(v) describe significance of lines of latitude and lines of longitude
(vi) describe differences of northern and southern hemispheres, and western and eastern hemispheres
(vii) explain the rotation of the earth, it relation to day & night
(viii) explain the seasons and their salient features
(ix) categorize the geosystems of the earth based on air, water, rocks and fauna and flora
(x) explain the nature, structure and composition in each geosystem

06 Attitudes – Students will:

- be keen to investigate the solar system
- be thought origin of the solar system and its relationship to human
- work in a team or cooperatively

THEME 2	LANDFORMS

01 Objectives: Student learning outcomes

At the end of the learning of landforms, the students will be able to demonstrate background knowledge and understanding of

(i) structure and composition of the earth
(ii) the layers extend from earth crust to the earth's centre.
(iii) constituent in each layer
(iv) meaning of earthquakes and distribution
(v) causes of earthquakes
(vi) earthquake scales, example Mercalli and Richter
(vii) difference between faults & folds
(viii) formative processes of faulting and folding
(ix) volcanic eruption and nature of its sediment
(x) magma flows and deposition patterns
(xi) landform processes and their geographical distribution
(xii) surface landforms and subsurface landforms
(xiii) erosional and depositional landforms formed of physical agents of denudation (water, wind, glaciers, and waves and currents)

02 Key issues and concepts

- Internal structure of the Earth
- Seismic waves and earthquakes
- Origin and evolution of landforms

03 Suggested learning activities

- Group work and discussions in relating to the solar system, earth in space and earth's interior
- Group work and discussion relating to earthquakes, faults and folds
- Model building to show the interior of the earth, faults and folds, volcanic activities, plate tectonics etc.
- Practical exercises to foster an understanding of endogenic and exogenic processes
- Use of computer learning centers (CLCs)
- Use of multimedia room
- Collection of photographs, pictures and images.

04 Suggested learning resources

- Wall maps and Atlas books
- Literature surveys
- Software (Encyclopedias such as Encarta and Britannica)
- Digital Curriculum relating to landforms, example, Land and Resources, Rivers: Shapers of the Earth Landscapes, Coastal Environment etc.)
- Photographs and pictures
- Videos, OHP and other multimedia materials

05 Skills: Student will be able to:

(i) recognize the structure of the earth
(ii) name the layers from earth crust to the earth's centre.
(iii) explain the salient features in each layer
(iv) explain the earthquakes waves and distribution
(v) identify the causes of earthquakes
(vi) explain the magnitude of earthquakes through earthquake scales
(vii) realize the discrepancy between faults & folds
(viii) describe the course for formative processes of faulting and folding
(ix) recognize the volcanic eruption and nature of the sediment
(x) recognize the magma flow and deposition patterns
(xi) explain landform processes and their geographical distribution
(xii) recognize the surface landforms and subsurface landforms
(xiii) explain erosional and depositional landforms formed of physical agents of denudation (Water, wind, glaciers, and waves and currents)

06 Attitudes – Students will:

- think invisible phenomena of the
- feel endogenic processes and physical agents of denudation
- work in a team or cooperatively

THEME 3	ROCKS & SOILS

01 Objectives: Student learning outcomes

At the end of the learning of rocks and soils, the students will be able to demonstrate background knowledge and understanding of

(i) chemical composition of the Earth
(ii) major rock forming minerals
(iii) mineral groups and types of minerals
(iv) basic chemical composition
(v) igneous rocks, sedimentary rocks and metamorphic rocks and their characteristics
(vi) the Rock Cycle and its process
(vii) weathering and soil forming process
(viii) factors affecting soil development
(ix) soil horizons and their characteristics
(x) soil erosion and its terrible effects
(xi) soil conservation and management

02 Key issues and concepts

- rock forming minerals
- rocks and rock types
- Rock cycle
- weathering and soil forming process

03 Suggested learning activities

- Group discussions and group works to identify rock forming minerals
- Conduct field visits to see various rock and soil zones of in Sri Lanka.
- Workshops, seminars and visits to scientific exhibitions and related awareness programmes, example soil conservation and soil management
- Use of computer learning centers (CLC)
- Use of multimedia room
- Collection of photographs and pictures relating to soil erosion, conservation and management.
- Conduct practical exercises to collect secondary information from libraries

04 Suggested learning resources

- World and regional maps to see the distribution of rocks and soils
- Textbooks and additional textbooks
- Software (Encyclopedias such as Encarta and Britannica)
- Digital Curriculum relating to rocks and minerals, example, Rocks and Minerals, Exploring Geology, the Geology of the Earth etc.
- Photographs and Pictures
- Videos, OHP and other multimedia material

05 Skills: Student will be able to:

(i) name major rock types

(ii) identify mineral groups of the rocks
(iii) explain basic chemical composition
(iv) explain the rock cycle and its processes
(v) describe the weathering processes and soil formation
(vi) describe the soil properties
(vii) ascertain the reasons for soil erosion and its effects
(viii) realize the necessity of soil conservation and management

06 Attitudes – Students will:

(iv) appreciate the value of different rocks and minerals used by human beings
(v) realize the significance of rocks, minerals, weathering and soil formation.

THEME 4	WEATHER AND CLIMATE

01 Objectives: Student learning outcomes

At the end of the study of weather and climate, the students will be able to demonstrate the basic knowledge and understanding of:

(i) global systems of climate
(ii) solar radiation input and atmospheric delivery of energy
(iii) moisture to the earth surface
(iv) solar energy input to the earth
(v) earth-sun relationship
(vi) heat energy balance,
(vii) lapse rates and temperature Inversion.
(viii) variability of pressure conditions
(ix) air stability and instability
(x) general circulation
(xi) air movement and air masses
(xii) depressions and their characteristics
(xiii) anti-cyclones. and their characteristics
(xiv) local and regional winds:
(xv) precipitation: nature, process and characteristics
(xvi) climatic year of Sri Lanka and monsoon rhythm
(xvii) climatic zones of Sri Lanka

02 Key issues and concepts

- Radiation balance
- Composition and structure of the atmosphere
- Air motions
- Atmospheric pressure
- Cyclones and anticyclones
- Evaporation and precipitation
- Climatic zones of Sri Lanka

03 Suggested learning activities

- Practical exercise with field visits
- Group discussions,

- Individual assignments
- Use of environmental EFSCs on-site
- Use of computer learning centers (CLCs)
- Use of multimedia room
- Collection of photos and pictures relating to atmospheric phenomena.

04 Suggested learning resources

- National Atlas (School Edition, Printed by Survey Department)
- Literatures related to the atmosphere
- Software (Encyclopedias such as Encarta and Britannica)
- Digital Curriculum relating to weather and climate, example, Climate, Landscape and Life, Clouds and Patterns of Weather, Weather and Climate, Winds, Fronts and Storms etc.
- Seminars, workshops and scientific exhibitions conducts by MD
- OHP, videos and other multimedia materials
- Photos, pictures and pamphlets relating to weather and climate
- Thermometer, Barometer, anemometer, Hydrometer, Rain Gauges etc.

05 Skills: Student will be able to:

(i) explain the global systems of climate
(ii) describe solar radiation input and atmospheric delivery of energy
(iii) recognize moisture to the earth surface
(iv) realize the behaviour solar energy input to the earth
(v) recognize the earth-sun relationship
(vi) explain heat energy balance, the earth-atmospheric system and at the earth surface
(vii) explain the lapse rates and temperature inversion.
(viii) identify difference between high pressure, low pressure and pressure gradient force
(ix) identify difference between air stability and instability
(x) describe the general circulation, air movement and air masses
(xi) explain difference between depressions and anticyclones.
(xii) explain local and regional and their relationship to change of climatic factors
(xiii) describe nature, process and characteristics of the precipitation
(xiv) recognize the climatic cycle of Sri Lanka, monsoon rhythm and climatic zones
(xv) explain the instruments relating to weather and climate. Example

06 Attitude: Student will:

(i) realize the need to measure real situation weather and climatic phenomena using relevant metres, for example, Thermometer, Barometer, anemometer, Hydrometer, Rain Gauge etc.

THEME 05	HYDROSPHERE

01 Objectives: Student learning outcomes

Students will be able to demonstrate background knowledge on human resources in Sri Lanka and understanding of

(i) process the hydrologic cycle and global water budget
(ii) water in the atmosphere, water on the land, and water in the soil
(iii) difference between soil moisture soil dryness
(iv) distribution of ground water and affecting factors
(v) location of aquifers and usage these aquifers
(vi) surface runoff and stream flows
(vii) the relationship between surface runoff and stream flows to lakes, tanks and reservoirs

02 Key issues and concepts

- Hydrologic cycle
- Global water budget
- Ground and surface waters
- Surface runoff

03 Suggested learning activities

(i) Group discussions and assignments
(ii) Conduct workshops and seminars relevant to the sub topics of hydrosphere
(iii) Use computer learning centres (CLCs)
(iv) Use of multimedia rooms
(v) Field visits, example to see the damages made by drought, floods, cyclone, landslides etc.
(vi) Collection of photographs pictures and paper cuttings relating to the sub topics of hydrosphere

04 Suggested learning resources

- World and regional maps
- National Atlas (School Edition, Printed by Survey Department & New Gunasena-Philips World Atlas)
- Software (Encyclopedias such as Encarta and Britannica)
- Digital Curriculum relating to hydrosphere phenomena, example, Exploring Oceanography etc.
- Literature published by different instruction for e.g. MD, SSD etc.
- Photos, Pictures and videos in relating to sub topics of hydrosphere

05 Skills: Students will be able to:

(i) explain the process between hydrologic cycle and global water budget
(ii) realize how water receives to the atmosphere, to the land, and to the soil
(iii) explain difference between soil moisture and soil dryness as well as their effects

(iv) explain distribution of ground water, its significance and affecting factors
(v) realize the location of aquifers, their characteristics and usage
(vi) explain the surface runoff and stream flows, and their relationship to exist lakes, tanks and reservoirs

THEME 06	GLOBAL ECOSYSTEMS

01 Objectives: Student learning outcomes

At the end of learning of the contents of practical geography theme, the students will be able to demonstrate background knowledge and understanding of

(i) types of ecosystem and their geographical distribution, example Tropical Forests and Tropical Grasslands
(ii) types of wetlands
(iii) hot deserts and cold winter deserts
(iv) coastal ecosystems, example estuaries and lagoons, mangrove swamps, sea grass beds, coastal dunes, and coral reefs
(v) factors affecting global environ-mental change, example, green house effect, depletion of Ozone Layer, El Nino and La Nina
(vi) Impact of global environmental change, example, global warming, climatic and sea level change, disease as well as human, animal and plant health
(vii) the concept of sustainable ecosystems
(viii) the necessity of management and conservation of ecosystems
(ix) the significance of Global and Regional conventions, protocol, agreements, seminars and workshops relating to global ecosystems
(x) the significance of National level specific programmes, Acts & Legislations relating to ecosystems of Sri Lanka
(xi) related organizations, example, Global & Regional level

02 Key issues and concepts

- Ecosystems in the Tropics
- Coastal ecosystems
- Coral reefs
- Deserts
- Global warming
- Climate Change
- Sustainable ecosystems
- Management and conservation of ecosystems

03 Suggested learning activities

- Group discussions, workshops and seminars
- Use of field work to see different ecosystems
- Practical exercises and Assignments
- Use of computer learning centres (CLCs)
- Use of EFCs

- Collection of photographs, pictures and images related to different ecosystems

04 Suggested learning resources

(vii) National Atlas (School Edition, Printed by Survey Department)
(viii) Literature published by CCD, MD, SSD, etc..
(ix) Photographs and images etc.
(x) Software (Encyclopedias such as Encarta and Britannica)
(xi) Digital Curriculum of Global Warming, Sustainable Development, Rainforest, the World Biomass etc.

05 Skills: Students will be able to:

(xii) identify different types of ecosystem of the world, example, forests, grasslands, wetlands and deserts
(xiii) explain the sub-ecosystems in coastal areas, example estuaries and lagoons, mangrove swamps, sea grass beds, coastal dunes.
(xiv) explain the coral reefs as an ecosystem as well as a landform
(xv) recognize the factors affecting global environ-mental change, example, green house effect, depletion of Ozone Layer, El Nino and La Nina
(xvi) describe the meaning of impact of global environmental change
(xvii) identify the factors for global warming, climatic and sea level change, disease as well as human, animal and plants health
(xviii) realize the need of sustainable ecosystems
(xix) explain the necessity of management and conservation of ecosystems
(xx) recognize the significance of Global and Regional conventions, protocol, agreements, seminars and workshops relating to global ecosystems
(xxi) explain the significance of National level specific programmes, Acts & Legislations relating to ecosystems of Sri Lanka
(xxii) identify related organizations, example, Global & Regional level

06 Attitudes: Students will:

(i) appreciate the need for sustainable ecosystems due to damages caused to global ecosystems by physical and human factors.

APPENDIX : 7

DRAFT OF THE PROPOSED GEOGRAPHY SYLLABUS FOR GRADE 12-13: SUGGESTED THEMES AND TOPICS

Paper II - PEOPLE & HUMAN ENVIRONMENT

THEME - 1 RESOURCES AND HUMAN ACTIVITIES		
TOPIC	**SUBTOPIC**	**CONTENTS**
Population	World population	• Size and growth
	Population distribution	• Spatial distribution • Differences between developed and developing countries
	Structure of population	• Age-sex ratio
	Population dynamics	• Growth, birth/death, migration (Internal & International)
	Population as a resource	• Life-expectancy, literacy, food & nutrition, health status
	Population related issues	• Aging, overpopulation, depopulation

THEME - 2 SETTLEMENTS		
TOPIC	**SUBTOPIC**	**CONTENTS**
Major Types	Rural settlements	• Evolution of rural population • Changing patterns and functions of developed and developing countries
	Urban settlements	• Impact of rural-urban migration • Causes of urbanization • Urban growth and functions • Major urban centres
	Major urban centres related issues	• Impact of rural-urban migration • Pollution, housing and land deficiency, traffics, social issues

THEME - 3 ECONOMIC ACTIVITIES		
TOPIC	**SUBTOPIC**	**CONTENTS**
Primary	Crop cultivation	• Extensive subsistence (shifting) • Intensive subsistence agriculture • Commercial plantation • agriculture • Commercial intensive (mixed) • Cereal cultivation (commercial grain)
	Horticulture	• Cut flowers and fruits
	Forestry	• Logging/lumbering & timber production • Pasture land Management • Protection of wildlife habitats • Watershed protection • Recreational use of nature areas • Environmental effects of the forestry
	Fishing	• Major fishing areas of the would Marine/fresh/brackish waters • Aquaculture • Issues related to fishery resources Pollution/depletion etc. • Fisheries management

	Animal husbandry Mining & quarrying	• Types (cattle, sheep, poultry, goat, swine etc.) • Major livestock ranching areas • Management of livestock ranching • Meet, milk and other product • Issues related animal husbandry Diseases • Petroleum, coal and iron ore mining Production and trade • Major mining areas • New trends of these mining industries
Secondary	Manufacturing industries	• Major types and areas Iron and steel (USA, JP, IN) Textile (US, IN, JP) Automobile (JP, GM, USA) Ship building (JP, NW) High-tech (JP, USA, IN) • Salient characteristics Location factors, production patterns, trade patterns, use & level of technology and innovations
Tertiary (Services)	Service industries Trade & Transport Communication	• Nature & characteristics • Modes (Land, air, water, or pipeline) • Goods and passenger transport • Level of trade & transport • (Internal & international) • Sharing ideas, information, and messages • Use of press, TV, Telephone, Radio, Postal, e-communications
	Tourism	• National and international • Factors affecting for tourism • Role of tourism for economic development • Impact of tourism on society

		& environment

THEME – 4 DEVELOPMET		
TOPIC	**SUBTOPIC**	**CONTENTS**

Levels of development	Measuring of development
	Developed & developing countries
	
	Factors responsible for under development
	The concept of sustainable development
		• Per Capita, GDP, GNP,
		• PQLI, HDI, PPP and other measures
		
		• Major characteristics
		  • Colonial rule
		  • Under development of resources utilization
		  • Social values
		  • Political stability
		
		• Approaches and practices

Organizations in development	Role of selected organizations in development	• UNFPA, UNEP, UNDP, FAO, WTO, EHO, SAARC, OPEC, IUCN, WB, G7

APPENDIX 8

PROPOSED OBJECTIVES, KEY ISSUES AND CONCEPTS, SUGGESTED LEARNING ACTIVITIES, SUGGESTED LEARNING RESOURCES, SKILLS, AND ATTITUDES

Geography II – People & Human Environment

THEME 1	RESOURCES AND HUMAN ACTIVITIES

01 Objectives: Student learning outcomes

At the end of the study of resources and human activities, the students will be able to demonstrate background knowledge of human resources and different human activities in the following:

(i) Size, growth and spatial distribution of world population
(ii) population distribution of developed countries
(iii) population distribution of developing countries
(iv) age-sex ratio as structure of population
(v) growth, birth/death rates and migrations under the topic of population dynamics
(vi) life-expectancy, literacy, food and nutrition and heath status under the topic of population as a resource
(vii) aging, overpopulation, depopulation etc as population related issues

02 Key issues and concepts

- Distribution and density of population
- Population structure
- Migration of population
- Optimum, over and depopulation

03 Suggested learning activities

- Practical exercise to recognize the distribution and density of population, population structure, migration of population
- Practical exercise to reveal the optimum, over and under population
- Group work and discussions help students to learn the mentioned subtopics of the population
- Use of graphs, diagrams and map relating to subtopics of population.
- Collect newspaper items, maps, photographs, etc.
- Use of computer learning centers (CLCs)
- Use of multimedia room

04 Suggested learning resources

- World, regional and national levels maps
- Literature published by different institutions

- Software (Encyclopedias such as Encarta, Britannica
- Digital curriculum relating to population and resources, example, south Asia: Land Resources, Africa: Land and Resources etc.
- Scientific exhibitions and collections relating to population growth, deceases ect.
- Data tables, photographs and paper cuttings
- OHP, videos and other multimedia materials
- Commuter learning centres (CLC)

05 Skills: Student will be able to:

(i) explain the size of world population
(ii) describe the growth of world population
(iii) explain details the spatial distribution of population
(iv) describe differences of population distribution of developed countries and developing countries
(v) recognize age-sex ratio as structure of population
(vi) recognize the growth, birth/death, internal migration under population dynamics
(vii) explains life-expectancy, literacy, food & nutrition and heath status as population recourses
(viii) explain aging, overpopulation, depopulation etc as population related issues

06 Attitudes – Students will:

(i) appreciate world population distribution, and problems caused by population, rapid growth and degradation of natural resources

THEME 2	SETTLEMENTS

01 Objectives: Student learning outcomes

At the end of the learning of settlements, the students will be able to demonstrate background knowledge and understanding of

(i) evolution of rural population
(ii) changing patterns and functions settlements in developed
(iii) changing patterns and functions settlements in developing countries
(iv) impact of rural-urban migration
(v) causes of urbanization
(vi) urban growth and functions
(vii) major urban centres
(viii) impact of rural-urban migration
(ix) major urban centres related issues mainly pollution, housing and land deficiency, traffics, social issues

02 Key issues and concepts

- Rural and urban settlements
- Urban centres related issues
- Rural depopulation

03 Suggested learning activities

- Group work and discussions
- Workshops/seminars
- Practical exercises
- Use of computer learning centers (CLCs)
- Use of multimedia room
- Collection of photographs, pictures, pamphlets etc.

04 Suggested learning resources

- World and regional maps to recognize the distribution of settlements
- Literature published by UDA and other institutions
- Software (Encyclopedias such as Encarta and Britannica)
- Digital Curriculum relating to settlements, example, "Garbage, Garbage, Garbage" and Urban Renewal
- Photographs and pictures
- Videos, OHP and other multimedia material

05 Skills: Student will be able to:

(xiv) follow the evolution (history) of rural population
(xv) recognize changing patterns and functions of developed and developing countries
(xvi) observe impact of rural-urban migration
(xvii) study the causes of urbanization
(xviii) observe urban growth and functions
(xix) recognize major urban centres
(xx) assume the impact of rural-urban migration
(xxi) distinguish major urban centres, related issues, example mainly pollution, housing and land deficiency, traffics, social issues

06 Attitudes – Students will:

(i) Consider the expansion of human settlements, their evolution and relationship with physical geographical factors.

THEME 3	ECONOMIC ACTIVITIES

01 Objectives: Student learning outcomes

At the end of the learning of rocks and soils, the students will be able to demonstrate background knowledge and understanding of

(i) crop cultivation and differences between extensive (shifting), subsistence agriculture, commercial plantation, mixed and commercial grain.
(ii) the cultivation of cut flowers and fruits in horticulture.
(iii) different production and other uses of forestry, their significance to protect watershed, wildlife habitats and management.
(iv) marine/fresh/brackish water fishing areas of the would, issues related to fishery resources, example, pollution and depletion and fisheries management

(v) Animal husbandry types, example, cattle, sheep, poultry, goat, swine etc. main products of animal husbandry, example, meet, milk and other product, major livestock ranching areas, issues and management of livestock ranching of the world

(vi) mining and quarrying of petroleum, coal and iron ore mining and major mining and production areas, and new trends.

(vii) major types and areas manufacturing industries of the world, salient characteristics, location factors and other infrastructures

(viii) location factors, production patterns, trade patterns, use & level of

(ix) nature of service industries

(x) nature & characteristics trade and transport

(xi) communication, which use to sharing ideas, information, and messages

(xii) use of press, TV, Telephone, Radio, Postal, e-communications

(xiii) national and international levels tourisms, factors affecting for tourism, and role of tourism for economic development

02 Key issues and concepts

- Spatial patterns of economic activities
- Food crops and issues
- Agro based industrial material
- Forestry, issues, sustainable development
- Fishery and fishery management
- Mining, quarrying and the environment
- Service industries and economic development, and issues

03 Suggested learning activities

- Group discussions and group works
- Workshops/seminars and visits to Porvincial/Zonal-wise agricultural, industrial and scientific exhibitions
- Use of computer learning centers (CLCs)
- Use of multimedia room
- Collection of photographs and pictures relating to economic activities
- Conduct practical exercises to collect secondary information relating to economic activities

04 Suggested learning resources

- World and regional maps, illustrate the different economic activities
- Literature surveys to collect additional readings, photographs, pictures, data tables, pamphlets etc.
- Use of software (Encyclopedias such as Encarta and Britannica, software on Geography and Social Studies)
- Economic and scientific exhibitions
- OHP, videos and other multimedia materials

05 Skills: Student will be able to:

(i) describe crop cultivation and their world distribution, example, extensive (shifting), subsistence agriculture, commercial plantation, mixed and commercial grain etc..
(ii) recognize the horticulture from other crop cultivation
(iii) recognize forestry as primary industry, production and other uses of forestry, their significance to protect watershed, wildlife habitats
(iv) realize the significance of management of forestry
(v) identify different fishery types, example, marine/fresh/brackish fishery.
(vi) explain the issues related to fishery resources, example, pollution and depletion
(vii) identify why need fishery management ?.
(viii) recognize animal husbandry types, example, cattle, sheep, poultry, goat, swine etc.
(ix) explain the main products of animal husbandry, example, meet, milk and other product
(x) Recognize the major livestock ranching areas
(xi) explain the issues and management of livestock ranching of the world
(xii) recognize mining of petroleum, coal and iron, and major mining and production areas using maps, explain new trends.
(xiii) recognize major types and areas manufacturing industries of the world using maps, and salient characteristics, location factors and other infrastructures
(xiv) describe location factors, production patterns, trade patterns in different industries.
(xv) explain the nature and chrematistics of service industries
(xvi) explain the nature & characteristics trade and transport
(xvii) use communication to sharing ideas, information, and messages, example press, TV, telephone, radio, postal, e-communications
(xviii) explain national and international levels of tourisms, factors affecting, and role of tourism for economic development

06 Attitudes – Students will:

(i) appreciate the value of different economic activities
(ii) realize the effects economic activities on the physical environment and appreciate the need for sustainable development

THEME 4	**DEVELOPMENT**

01 Objectives: Student learning outcomes

At the end of the study of the physical environment of Sri Lanka, the students will be able to demonstrate background knowledge and understanding of:

(i) measuring of development using Per Capita, GDP, GNP, PQLI, HDI, PPP and other measures
(ii) identifying developed & developing countries and their major characteristics

(iii) the concept of sustainable development with approaches and practices

(iv) role of selected organizations in development, example, UNFPA, UNEP, UNDP, FAO, WTO, WHO, SAARC, OPEC, IUCN, WB, G7

02 Key issues and concepts

- Geological and hydrological relationships
- Geological history
- Mineralogical differentiation
- Minerals and rocks
- Climatic factors
- Dynamic atmosphere
- Relationships between altitude, landforms, climate, fauna and flora

03 Suggested learning activities

- Practical exercise with field visits
- Group discussions, individual assignments
- Conduct survey emphasizing social and economic issues
- Use of computer learning centers (CLCs)
- Use of EFCs
- Use of multimedia room
- Collection of photos and pictures in relating to sub topics.

04 Suggested learning resources

- National Atlas (School Edition, Printed by Survey Department)
- Literature surveys, collect Photographs, pictures, pamphlets etc.
- Software (Encyclopedias such as Encarta, Britannica)
- Digital Curriculum, example, Sustainable Development and other related topics
- Seminars, workshops and scientific exhibitions conduct by National/International Organizations.
- OHP, videos and other multimedia materials

07 Skills: Student will be able to:

(i) recognize the level of development

(ii) distinguish the measures of development, example Per Capita, GDP, GNP, PQLI, HDI, PPP etc.

(iii) identify developed & developing countries and their major characteristics

(iv) explain concept of sustainable development with approaches and practices

(v) explain role of selected organizations in development, national and international, example, UNFPA, UNEP, UNDP, FAO, WTO, WHO, SAARC, OPEC, IUCN, WB, G7

06 Attitude: Student will:

(i) apply positive thinking to economic and social developments, related issues, and their relationship to worldwide organizations.

ANNEX 9. ACTION PLAN FOR MODERNIZING GRADES (10 - 11) - GEOGRAPHY CURRICULUM

	TASK	RESPONSIBILITY	TIME FRAME											
			2004		2005				2006				2007	
1.	Form Advisory Committees	Director General, NIE												
2.	Conduct Advisory Committee Meetings	Director General, NIE												
3.	Select Resource Persons for O/L Geography Subject	Director - Social Sciences, NIE												
4.	Prepare A/L Geography Core Syllabus Content	Chief Project officer, O/L, NIE												
5.	Educate Resource Persons on O/L Geography Curriculum	Chief Project officer, O/L, NIE												
6.	Prepare Teachers' Guides for Grade 10	Chief Project officer, O/L, NIE												
7.	Prepare In-Service Materials for O/L Geography Curriculum	Chief Project officer, O/L, NIE												
8.	Prepare Textbooks for Grade 10	Commissioner, Publications												
9.	Educate A/L Geography Teachers	Chief Project officer, O/L, NIE												
10.	Prepare Teachers' Guides for Grade 11	Chief Project officer, O/L, NIE												
11.	Prepare Textbooks for Grade 11	Commissioner, Publications *												
12.	Implement New Curriculum - Grade 10	Ministry of Education												
13.	Monitor and Obtain Feedback through O/L	Director, Social Sciences, NIE												

	Resource Persons															
14.	Implement New Curriculum - Grade 11	Ministry of Education														
Note: **1**. The time intervals indicated are three months each. **2.** It is expected that each task is completed within the stipulated period. **3.** It is recommended that the proposed guidelines are adhered to when developing the curriculum material. **4** Teacher education should be an on-going process, starting with Grade 10, and continued to cover Grade 11.																

ANNEX 10. ACTION PLAN FOR MODERNIZING GRADES (12 - 13) - GEOGRAPHY CURRICULUM

TASK		RESPONSIBILITY	TIME FRAME																									
			2004						2005						2006						2007							
1.	Form Advisory Committees	Director General, NIE																										
2.	Conduct Advisory Committee Meetings	Director General, NIE																										
3.	Select Resource Persons for A/L Geography Subject	Director - Social Sciences																										
4.	Prepare A/L Geography Syllabuses	Chief Project officer, A/L, NIE																										
5.	Prepare Teachers' Guides for Grade 12	Chief Project officer, A/L, NIE																										
6.	Educate Resource Persons on A/L Geography Curriculum	Chief Project officer, A/L, NIE																										
7.	Prepare In-Service Materials for A/L Geography Curriculum	Chief Project officer, A/L, NIE																										
8.	Prepare Textbooks for Grade 12	Commissioner, Publications *																										
9.	Educate A/L Geography Teachers	Chief Project officer, A/L, NIE																										
10.	Prepare Teachers' Guides for Grade 13	Chief Project officer, A/L, NIE																										
11.	Prepare Textbooks for Grade 13	Commissioner, Publications *																										
12.	Implement New Curriculum - Grade 12	Ministry of Education																										

13.	Monitor and Obtain Feedback through A/L Resource Persons	Director,Social Sciences														
14.	Implement New Curriculum - Grade 13	Ministry of Education														

Note: 1. The time intervals indicated are three months each. 2. It is expected that each task is completed within the stipulated period. 3. It is recommended that the proposed guidelines are adhered to when developing the curriculum material. 4. Teacher education should be an on-going process, starting with Grade 12, and continued to cover Grade 13.

APPENDIX 11:

LIST OF EQUIPMENT FOR THE ENVIRONMETAL FIELD STUDY CENTRES (RESOURCES CENTRES) – ON SITE

Permanent

Anemometer	1
Binoculars	5
*Bottom grab	1
Bunsen burners	5
Burette stands	5
Compass	2
A pair of dividers	5
Gas container	1
Meter ruler	1
Microscopes (x 600)	5
Microscope (x 1000)	1
Nylon rope (100 m)	1
*Plankton net	2
Plant presser	5
Plastic bottles (small)	5
Plastic bottles (large)	2
Plastic trays	5
Plastic ruler (30cm)	5
Pocket magnifiers	5
*Salinometer	1
*Secchi disc	2
Sieves for soil (set)	1
Soil corer	1
Soil pH and moisture Tester	1
Stereo microscope	5
Telescope with tripod	1
Thermometer (0 – 100)	5
Thermometer (min.-max.)	1

Glassware, accessories

Acid resistant dropping Pipettes	2
Beaker (50 ml)	5
Beaker (100 ml)	5
Beaker (250 ml)	5
Beaker (500 ml)	5
Beaker (1000 ml)	2
Burettes (50 ml)	5
Burettes (100 ml)	5
Cylinder (25 ml)	5
Dropping pipettes (10 ml)	2
Flask, t. (100 ml)	5
Flask, t. (250 ml)	5
Flask, t. (500 ml)	5
Flask, v. (250 ml)	5
Flask, v. (500 ml)	5
Flask, c. (250 ml)	5
Glass rods	5
Glass funnels	2
*Glass water sampl. bottles5 (white)	
*Glass water samp. bottles (brown)	5
Microscope slides (package)	1
and cover slips (package)	1
Petri dishes with covers	10
Watch glasses	5

Others

Blades (package)	2
Blotting paper (100 sheets)	1
Hand spade	1
Herbarium	2
Herbarium paper (package)	2
Insect needles (package)	2
Insect boxes	2
Marker pens	5
pH paper (package)	1
Pinsets, straight	5
Pinsets, curved	5
Reagent bottles (white)	5
Reagent bottles (brown)	5
Rubber funnel	2
Rubber cloves	10
Sampling bags (package)	2

Chemicals

Acetic acid	2 l
Aluminium powder	100 g
Ammonia solution	2 l
Ammonium acetate	100 g

Ammonium carbonate	250 g
Ammonium chloride	500 g
Ammonium dichromate	100 g
Ammonium nitrate	100 g
Ammonium sulphate	500 g
Amylase	100 g
Aniline blue	25 g
Antimony oxide	50 g
Aqua destillata	2 l
Barium carbonate	200 g
Benzoic acid	100 g
Calcium carbonate	500 g
Calcium hydroxide	500 g
Calcium nitrate	250 g
*Canada balsam/DPX mountant	
Carbon tetrachloride	500 ml
*Clove oil	500 ml
Cobalt nitrate	100 g
Cobalt II chloride	200 g
Copper II chloride	100 g
Copper II nitrate	250 g
Copper II oxide	100 g
Copper II sulphate	500 g
Diastase	250 g
Ethanol	2 l
*Ethyl acetate	100 g
Feling's solution I	500 ml
Feling's solution II	250 g
Ferrous sulphate	250 g
Formaldehyde	2 l
Formalin	1 l
*Glycerin	250 ml
Hydrochlorid acid	2 l
Iron fillings	500 g
Lamp sprit	2 l
Lead carbonate	250 g
Lead dioxide	100 g
Lead nitrate	500 g
Magnesium ribbon	100 g
Manganous sulphate dehydrate	100 g
Methanol	500 ml
Methyl orange	50 g
Methyl red	100 g
Nestler reagent	100 ml
Nitric acid	2 l
Nitrobenzene	250 ml
pH buffer	
Potassium chloride	100 g
Potassium dichromate	250 g
Potassium hydroxide	500 g
Potassium sulphite	100 g
*Rose Bengal indicator	
*Salicylic acid	
Soda lime	500 g
*Sodium azide	
Sodium bicarbonate	250 g
Sodium carbonate	500 g
Sodium hydrate	500 g
Sodium sulphite	250 g
*Sodium tiosulphate pentahydrate	
*Starch solution	500 ml
Strontium carbonate	250 g
Strontium nitrate	250 g
Sulphuric acid	2 l
Sulpher roll	100 g
*Xylene	
Zinc foil	250 g
Zinc oxide	50 g

Compiled by Hamari, Risto, 2004
Environment Subject Specialist.

Additional List for Geography Subject

Globes	2
Wall maps (World)	
Physical	1
Thematic	4
Wall Maps (Sri Lanka)	
Physical	1
Thematic	4
Satellite Image (Sri Lanka)	1
1:50000 metric maps	4
Measuring Tape (100')	1
Rock Sample kit	1
World Atlas Books	2
Sri Lanka Atlas Books	2
Hammer (geological)	1
Satellite Image (Sri Lanka)	1

Katupotha, 2004

ANNEX 12: ASSESSMENT MOBILITY, TEACHING-LEARNING ASPECTS ANS SIGNIFICANT LINKAGES WITH BASIC COMPETENCIES

Assessment modality	Comments in terms of teaching-learning aspects (for)	Significant linkages with Basic Competencies
1. Individual assignments	Deepening the comprehension of a lesson topic, Judicious selection, applying and reorganizing knowledge, problem-solving, reasoning, Connections to real life, Developing self-learning skills.	A – with aspects depending on topic, B - with aspects depending on topic, C – particularly in Religion, E – very significantly.
2. Individual projects	Deepening the comprehension of a lesson topic, multidisciplinary approaches, Judicious selection, applying and reorganizing knowledge, problem-solving, reasoning, Connections to real life, Developing self-learning skills, Advance planning and organization of activities, Self assessment and correction, Report writing.	A – with aspects depending on topic, B - with aspects depending on topic, C – particularly in Religion, E – very significantly.
3. Surveys	Advance planning and organization of activities., multidisciplinary approaches, Preparation of questionnaires, data tables, Collection of data, Conclusions based on data, Connections to real life, Cooperative learning, Developing self-learning skills, Self assessment and correction and report Writing	A – with aspects depending on topic, B - with aspects depending on topic, C – particularly in Religion, E – very significantly.
Assessment modality	**Comments in terms of teaching-learning aspects (for)**	**Significant linkages with Basic Competencies**

4. Observational activities	Advance planning and organization of observational activities, Conclusions based on observations, Connections to real life, Developing self-learning skills, Self assessment and correction, Report writing/Oral presentations.	A – with aspects depending on topic, B - with aspects depending on topic, C – particularly in Religion, E – very significantly
5. Displays	Advance planning and organization of observational activities, Choice of material and economical use, Connections to real life, Developing self-learning skills, Self assessment and correction, Presentation and display skills.	A – very significantly; with aspects depending on topic, B - with aspects depending on topic, C – particularly with regard to sensitivities of viewers, E – very significantly.
6. Field visits	Advance planning and organization of activities., multidisciplinary approaches, Connections to real life, Recording of observations, sketches, maps, Cooperative learning, Developing self-learning skills, Teachers to work as co-learners Report writing.	A – with aspects depending on topic, B - with aspects depending on topic, C – particularly regarding respect for site, D –with regard to use of leisure later in life, E – very significantly.
7. Oral Presentations	Assessing content learning, Assessing comprehension of content, Organizing of content for presentation, Use of multimedia.	A –very significantly; with aspects depending on topic, B - with aspects depending on topic, C – particularly regarding respect for sensitivities of audience.
Assessment modality	**Comments in terms of teaching-learning aspects (for)**	**Significant linkages with Basic Competencies**
8a. Short written tests	Assessing content learning, Comprehension of content,	Very restricted scope for developing basic competencies.
8b. Essays	Assessing content learning,	A – with aspects depending on topic,

	Assessing comprehension of content, Organizing of content for presentation, Syntax, clarity of diction and spelling in case of language.	B –limited; with aspects depending on topic.
9. Listening	Attention span, adequacy, accuracy checked when listening speech, discussion or taped or live-programs. Writing summaries, Intelligent responses and discussions.	A – regarding ability to grasp a communication and responding intelligently. D –with regard to use of leisure later in life, E – listening for self learning.
10.Open book	Assessing content learning, Assessing comprehension of content, Quick referencing of books, Judicious selection, applying and reorganizing knowledge, problem-solving, reasoning, Developing self-learning skills.	A – regarding ability to use a written or graphic communication, E – very significantly.
11. Practicals	Hands on experiential learning, Choice of equipment/apparatus, Safety precautions and care of equipment, Developing observational skills, Recording relevant observations, Developing self-learning skills.	A – through presenting conclusions; use of tables and graphs, B – significantly, with aspects depending on topic, C – regarding respect for specimens/material used, E – very significantly.
12. Creative activities	Developing use of Simulation, Role-playing Dramatics, Singing, Use of Musical Instruments, Dance, Poster and Graphic Art, Modelling Choice of material and economical use, Cooperative learning, Developing self-learning skills, Self assessment and correction, Presentation and display skills.	A – significantly through use of song, dance and visuals B –with aspects depending on topic, C – regarding respect for sensitivities of viewers/audience. D –with regard to use of leisure later in life, E – significantly.
13. Group Projects/Assignments	All at 1 & 2 above, Team work, leadership, goal orientation,	A – significantly, B- significantly depending on aspects,

	Identification of special skills, Opportunities for peer assessment, correction and peer direction Social responsibility, loyalty, accountability.	C – loyalty, social responsibility, accountability, E – very significantly.
14. On-site Environmental Field Studies **(This is a special modality facilitated by SEMP through the rehabilitation and expansion of specially selected and developed ecologically interesting sites for on-site Field Studies)**	All at 1 & 2 above, Those which are special to 3, 4. 6, 11 above, Those which are special to 13 above,	A –very significantly; with aspects depending on topic, B - very significantly with respect to the Biological and Physical Environment, C – particularly regarding respect for ecology of site, D –with regard to use of leisure later in life, E – very significantly.

(W.S. Perera, 2003).

ANNEX: 13

LIST OF EQUIPMENT AND CADRE POSITION FOR PROPOSED CARTOGRAPHY LABORATORY

Equipment		Total Quentity	Value of item Rs.	Total Cost Approximate
Drawing Tables (wood)		35	6000.00	210,000.00
Light Tables		03	15,000.00	45,000.00
Aerial Photographs (overlapping pairs)	4 x 30	120	400.00	48,000.00
Coastal areas	4 x 30	120	400.00	48,000.00
Dry Zone Lowlands	4 x 30	120	400.00	48,000.00
Dry Zone Highlands	4 x 30	120	400.00	48,000.00
Wet Zone Lowlands	4 x 30	120	400.00	48,000.00
Wet Zone Highlands	4 x 30	120	400.00	48,000.00
Pocket Stereoscopes		35	5100.00	178,500.00
Mirror Stereoscopes		04	160,000.00	640,000.00
Geologic Compass		03	1,500.00	4,500.00
Normal Compass		10	250.00	2,500.00
1:50000 Topographic maps (in different areas)		300	135.00	40,500.00
Thematic maps				7,500.00
World Atlas Books		05	1,100.00	5,500.00
Globes 6 (different sizes)				
Measuring Tape (100')		05	800.00	1,250.00
Magnifying Glass		35	250.00	8,750.00
10 computers				750,000.00
GSP instrument		03	35,000	105,000.00
GIS and other software (ArcView or user-friendly packages				800,000.00
TOTAL (Approximate Cost)				**3,086,500.00**

Cadre Requirements Technician (Cartography) Lab Assistants (excluding resource persons)	01 Post 02 Posts	
Following maps/instruments also should be placed in the cartographic laboratory.	**Maps and Instruments** Wall maps (World) 2 Physical 4 Thematic 8 Wall Maps (SL) (Physical & Thematic) 1 Satellite Image (SL) Measuring Tape (100') 5 Rock Sample kit 5 World Atlas Books 2 Sri Lanka Atlas Books 2 Hammer (geological) 3	
In addition to above weather station (mini meteorological station) should be established to provide meaningful geography teacher training.	**Minimum Requirements** Thermometer, Barometer, anemometer, Hydrometer, Rain Gauges etc.	

APPENDIX 14

COST EATIMATE FOR PROPOSED ACTION PLAN, GCE (OL)						
Activity	**Responsible Institute**	**2004**	**2005**	**2006**	**2007**	
		COST ESTIMATE				
Form Advisory Committees (AC) and **Conduct AC Meetings**	Director General, NIE	7,500/=				7,500.00
Select Resource Persons for OL Geography Subject Educate Resource Persons on OL Geography Curriculum Prepare and finalize OL Geography Core Syllabus Content **6 persons/3 days/2 workshops**	Director - Social Sciences, NIE Chief Project officer, O/L, NIE Chief Project officer, O/L, NIE	65,000/=				65,000.00
Prepare Teachers' Guides for Grade 10-11 6 persons/Charges for	Chief Project officer, O/L, NIE	200,000/=				200,000.00

writing/advisory meeting/meals and other expenditure Printing cost 200 Pages/5000 copies Papers, ink, colour printing				550,000/=	550,000.00
Prepare In-Service Materials for OL Geography Curriculum (1) Preparation of teaching material for teacher training workshop (2) Buying user friendly software for main topics of Physical and Human Geography	Chief Project officer, O/L, NIE (1) (2)		40,000/= 120,000/=		160,000.00
Prepare Textbooks for Grade 10-11 (1) Preparation of manuscript/ advisory committee (about 300 pages TB)	Commissioner, Publications (1)		300,000/=		

(2) Printing 5000 copies	(2)		1,200,000/=		15,000,000.00
Educate O/L Geography Teachers Train the 300 ISA At least 10 workshops need to be held provincial level Rs. 400/= per dium payment and other expenses	Chief Project officer, O/L, NIE			600,000/=	600,000.00
Implement New Curriculum (OL)	Ministry of Education Teacher Training programmes Provincial & Zonal Levels			2,000,000/=	2,000,000.00
Monitor and Obtain Feedback through O/L Resource Persons	Director, Social Sciences, NIE			100,000/=	100,000.00
TOTAL COST					**5,100,000.00**

* Excluding charges for Tamil translations of curriculum, preparation of TGs and TBs, and other relevant material.

APPENDIX 15

COST EATIMATE FOR PROPOSED ACTION PLAN, GCE (AL)						
Activity	**Responsible Institute**	**2004**	**2005**	**2006**	**2007**	
		COST ESTIMATE				
Form Advisory Committees (AC) and **Conduct AC Meetings**	Director General, NIE	7,500/=				7,500.00
Select Resource Persons for AL Geography Subject Educate Resource Persons on AL Geography Curriculum Prepare and finalize AL Geography Core Syllabus Content **6 persons/3 days/2 workshops**	Director - Social Sciences, NIE Chief Project officer, O/L, NIE Chief Project officer, O/L, NIE	65,000/=				65,000.00
Prepare Teachers' Guides for Grade 10-11	Chief Project officer, O/L, NIE		200,000/=			200,000.00

6 persons/Charges for writing/advisory meeting/meals and other expenditure Printing cost 200 Pages/5000 copies Papers, ink, colour printing				550,000/=	550,000.00
Prepare In-Service Materials for AL Geography Curriculum (1) Preparation of teaching material for teacher training workshop (2) Buying user friendly software for main topics of Physical and Human Geography	Chief Project officer, O/L, NIE (1) (2)		40,000/= 120,000/=		160,000.00
Prepare Textbooks for Grade 10-11 (1) Preparation of manuscript/ advisory committee (about 300 pages TB)	Commissioner, Publications (1)		300,000/=		

(2) Printing 5000 copies	(2)		1,200,000/=	15,000,000.00	
Educate AL Geography Teachers Train the 300 ISA At least 10 workshops need to be held provincial level Rs. 400/= per dium payment and other expenses	Chief Project officer, NIE			600,000/=	600,000.00
Implement New Curriculum (AL)	Ministry of Education Teacher Training programmes Provincial & Zonal Levels			2,000,000/=	2,000,000.00
Monitor and Obtain Feedback through A/L Resource Persons	Director, Social Sciences, NIE			100,000/=	100,000.00
TOTAL COST					**5,100,000.00**

* Excluding charges for Tamil translations of curriculum, preparation of TGs and TBs, and other relevant material.