Information and Communication Technology Syllabus

Grade 8

To be implemented from 2018

Department of Information Technology
Faculty of Science and Technology
National Institute of Education
Maharagama
Sri Lanka
www.nie.lk

Information and Communication Technology (ICT)
Grade 08 –Syllabus

First Print 2018

ISBN:

Department of Information Technology
Faculty of Science and Technology
National Institute of Education
Maharagama

www.nie.lk

Printed by

CONTENTS **Page No**

1. Introduction

The Information and Communication Technology sector is acknowledged worldwide as a tool that could be used to increase the productivity, efficiency and effectiveness of work. However, in Sri Lanka, the level of ICT skills of the majority of the students is not adequate to meet the current requirements of business and industry. This is mainly due to lack of opportunities for students to study ICT related subjects in the school curriculum. The student should learn at school a wide variety of competencies for different needs of life in the changing world. They should have various views and different ways to continue studies and proceed to employment.

At present ICT is taught as a subject at G.C.E. (O/L) in a limited number of schools and at G.C.E. (A/L) in even less number of schools in Sri Lanka. In this situation students officially start to learn ICT at Grade 10 and as a result a heavy load of subject matter has to be included in ICT at G.C.E. (O/L). Distribution of ICT subject matter over lower Grades will definitely reduce this load and provide students with opportunity to learn ICT at early stages of school life. Therefore it has been decided to implement ICT as a subject from Grade 6 onward.

The time allocated for ICT at Grade 8 is limited to 30 Periods (40 minutes per Period) per year only. During this period, learning is more focused on practical aspects of the subject with limited amount of theoretical content. This is a continuation of the Grade 7 ICT curriculum. More emphasis is placed on programming concept and inclusion of simple programming of hardware devices is also introduced at Grade 8. Competencies of the use of software for simple statistical analysis and data representations are also presented in this curriculum. Students are expected to build ICT concepts through interaction with hardware and software of ICT. Skills of handling of keyboard and mouse, basic use of Internet and basic programming in a visual environment along with good practices in the use of ICT are discussed in this syllabus.

2. National Goals

1. Based on the concept of respecting human values and understanding the differences between the Sri Lankan multi-cultural society, building up the nation and confirming the identity of Sri Lanka by promoting national integrity, national unity, national coherence and peace
2. While responding to the challenges of the dynamic world, identifying and conserving the national heritage.
3. Creating an environment which comprises of the conventions of social justice and the democratic life to promote the characteristics of respecting the human rights, being aware of the responsibilities, concerning each other with affectionate relationships.
4. Promoting a sustainable life style based on the people's mental and physical well-being and the concept of human values
5. Promoting the positive feelings needed for balanced personality with the qualities of creative skills, initiative, critical thinking and being responsible
6. Through education, developing the human resources, needed for the progress of the well-being of an individual, the nation as well as the economic growth of Sri Lanka.
7. Preparing the people for the changes that occur in a rapidly changing world by adapting to it and controlling them; developing abilities and potentialities of people to face the complex and unexpected occasions.
8. Sustaining the skills and attitudes based on justice, equality, mutual respect which is essential to achieve a respectable place in the international community.

National Education Commission Report (2003)

3. Basic Competencies

The competencies promoted though the education mentioned below might help to achieve the above mentioned National Goals.

(i.) Competencies in Communication

This first set of competencies is made up of four subsets - Literacy, Numeracy, Graphics and Information & Communication Technology skills:

Literacy : Carefully listening, speaking clearly, and reading for comprehension, writing clearly and accurately.

Numeracy : Using numbers to count, calculate, code and to measure, matter, space and time.

Graphics : Making sense of line and form, expressing and recording essential data, instructions and ideas with line, form, color, two and three-dimensional configurations, graphic symbols and icons

ICT Competencies: Knowledge on computers, and the ability to use the ICT skills at learning or work as well as in the private life

(ii.) Competencies relating to the Personality Development

- Generic skills such as creativity, divergent thinking, initiative, decision making, problem-solving, critical and analytical thinking, team work, inter-personal relationships, discovering and exploring
- Values such as integrity, tolerance and respect for human dignity.
- Cognition

(iii.) Competencies relating to the Environment.

This set of competencies relates to the Social, Biological and Physical Environments.

Social Environment: Awareness, sensitivity and skills linked to being a member of society, social relationship, personal conduct, general and legal conventions, rights, responsibilities, duties and obligations.

Biological Environment: Awareness, sensitivity and skills linked to the living world, man and the ecosystem, the trees, forests, seas, water, air and life - plant, animal and human life.

Physical Environment: Awareness, sensitivity and skills relating to space, energy, fuels, matter, materials and their links with human living, food, clothing, shelter, health, comfort, respiration, sleep, relaxation, rest, wastes and excretion, media of communication and transport. *Included here are the skills in using tools to shape and for materials for living and learning.*

(iv.) Competencies relating to preparation for the world of work

Employment related skills to maximize their potential and to enhance their capacity to contribute to economic development; to discover their vocational interests and aptitudes; to choose a job that suits their abilities and; to engage in a rewarding and sustainable livelihood

(v.) Competencies relating to religion and ethics

This set of competencies deals with values and attitudes. It is essential for individuals to assimilate values, so that they may function in a manner consistent with the ethical, moral and religious modes of conduct, rituals, practices in everyday living, selecting the most appropriate.

(vi.) Competencies in play and use of leisure

Competencies that link up with pleasure, joy, emotions and such human motivations. These find expression in play, sports, athletics and leisure pursuit of many types. These also link up with such values as cooperation, team work, healthy competition in life and work. Here are included such activities as are involved in aesthetics, arts, drama, literature, exploratory research and other creative modes in human living

(vii.) Competencies relating to 'Learning to Learn'.

These competencies flow directly from the nature of a rapidly changing, complex and interdependent and crowded world. Whatever one learns, that learning will need updating and review. This requires that one should be aware of, sensitive and skillful in sustained attention, and be willing to persevere and attend to details that matter in a given situation.

4. Aims of the Information and Communication Technology (ICT) Curriculum

Such a surge in the growth, development and the application of Information Communication Technology as today has never been experienced before. The importance and relevance of ICT to almost all walks of life today has made it all the more important that knowledge and expertise, both practical and theoretical, of its application, should begin at the very grass roots level of education.

Aims to be achieved by the course are as follows:

- Develop skills useful to access ICT resources.
- Develop basic skills in the use of software for simple calculations.
- Develop basic concepts in programming.
- Inculcate basic good practices in the use of ICT resources
- Inculcate basic computer literacy and develop a base for further pursuit of Information Technology and Communication Technology studies.

5. How the national goals are addressed in this curriculum

National Goals	Curriculum Aims	Curriculum Objectives (competencies)
Promoting the positive feelings needed for balanced personality with the qualities of creative skills, initiative, critical thinking and being responsible	Develop basic concepts in programming.	Uses flow chart to solve simple problems with sequence , selection, iteration (4)
Through education, developing the human resources, needed for the progress of the well-being of an individual, the nation as well as the economic growth of Sri Lanka.	• Develop skills useful to access ICT resources. • Develop basic skills in the use of software for simple calculations. • Inculcate basic computer literacy and develop a base for further pursuit of Information Technology and Communication Technology studies.	• Investigates how instructions and data are represented in the computer (1) • Uses computers efficiently and effectively with operating system (2) • Uses spreadsheet software for calculations (3) • Uses software package for physical computing to implement programming logic (6)
Preparing the people for the changes that occur in a rapidly changing world by adapting to it and controlling them; developing abilities and potentialities of people to face the complex and unexpected occasions.	Inculcate basic good practices in the use of ICT resources	Explores educational Information using Internet (7)

Grade 8 Syllabus Information and Communication Technology				
Competency	**Competency Level**	**Content**	**Learning Outcome**	**Duration/ Periods**
1. Investigates how instructions and data are represented in the computer	1.1. Converts decimal numbers to binary numbers and vice versa	• Introduction to Number Systems o Decimal and Binary Number System o Conversion from Decimal to Binary o Conversion from Binary to Decimal	i. Describes Number systems with 10 and 2 as the base ii. Converts decimal integers to binary and vice versa	03
	1.2. Appreciates the working logic (binary concept) in computers	• Method of data representation using 0 and 1 • Binary data flow among the computer components	i. Represents positive decimal integers in binary ii. Explains the method of displaying a character (Alpha numeric symbolic)/ image on the monitor using a bitmap	02
2. Uses computers efficiently and effectively with operating system	2.1. Uses Operating System for configuring and applying settings	• Regional settings: Date, Time, Currency, Number format • File properties • File Search	i. Makes settings: Date, Time, Currency, Number format ii. Sets File properties: read-only, hidden, location, size iii. Searches files with extension	02
	2.2. Explores basic troubleshooting of computers and maintenance procedures (hardware and software)	• Troubleshooting of simple computer faults • Hardware issues (keyboard, mouse, power cable, network cable, VGA cable) • Sound output issues (speaker connectivity, check the volume) • Ports connectivity (PS/2, USB, Micro USB, VGA, HDMI, Parallel, RJ45, Memory Card Reader) • Troubleshooting and resolving of relevant computer software issues • Corrupt software • Blank desktop	i. Troubleshoots and resolves relevant hardware issues ii. Troubleshoots and resolves relevant software problems	02

3. Use of word-processing software in day today activities	3.1. Uses basic functions of word processing software in creating a document	• Create, open, save and close a document • Formatting of Text • Inserting files/objects (text, picture, shapes, clip art, word art etc.) • Inserting a table • Spelling and grammar check • Lists	i. Creates a formatted document using word processing software	06
4. Uses flow chart to solve simple problems with sequence, selection and develop programs (Using Scratch)	4.1. Analyzes the problem	• Identification of input, process and output steps • Identification of applications created for mobile and smart devices • Documentation of solution using flow charts	i. Analyzes the problems in simple day to day life ii. Explains the problem with a block diagram iii. Describes applications in mobile and smart devices	02
	4.2. Uses control structures to develop simple programs	• Introduction to simple algorithm and control structures of Selections • Developing simple programs (Sequence and Selection) using visual supports of programming language (using an Interface)	i. Describes control structures (selection only) ii. Applies control structures to solve simple day to day problems	05
5. Uses a software package for physical computing to implement programming logic	5.1. Uses a simple hardware device to implement physical computing	• Components of physical computing device • Controllable devices • Turning on/off LEDs • Design LED patterns with simple programs	i. Writes a program to operate external circuits using two logic levels (yes/no, on/off) ii. Implements programs on physical devices. Example: Turning On/Off the LEDs with passing values	05

6. Explores educational information using the Internet	6.1 Searches information on the Internet	• Search Engines: Google, Yahoo etc. • Educational browsers	i. Identifies Search Engines ii. Searches information using the Internet	01
	6.2. Creates websites with advanced features	• Tags, Elements, Attributes, Text formatting etc. • Advanced features in hyperlinks	i. Designs websites as per specifications ii. Develops websites as per design	02
			Total	30