

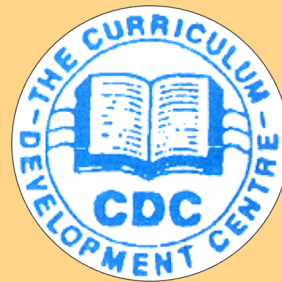


Republic of Zambia

Ministry of Education, Science, Vocational Training and Early Education

COMPUTER STUDIES SYLLABUS

Grades 8 and 9



Prepared and Published by the Curriculum Development Centre
P.O. Box 50092
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VISION

Quality, lifelong education for all which is accessible, inclusive and relevant to individual, national and global needs and value systems.

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Preface

The syllabus was produced as a result of the Curriculum review process carried out by the Ministry of Education, Science, Vocational Training and Early Education under the auspices of the Curriculum Development Centre (CDC). The curriculum reform process started way back in 1999 when the Ministry of Education commissioned five (5) curriculum studies which were conducted by the University of Zambia. These studies were followed by a review of the lower and middle basic and primary teacher education curriculum. In 2005 the upper basic education National survey was conducted and information from learners, parents, teachers, school managers, educational administrators, tertiary institutions traditional leaders civic leaders and various stakeholders in education was collected to help design a relevant curriculum.

The recommendations provided by various stakeholders during the Upper Basic Education National survey of 2005 and National symposium on curriculum held in June 2009 guided the review process.

The review was necessitated by the need to provide an education system that would not only incorporate latest social, economic, technological and political developments but also equip learners with vital knowledge, skills and values that are necessary to contribute to the attainment of Vision 2030.

The syllabus has been reviewed in line with the Outcome Based Education principles which seek to link education to real life experiences that give learners skills to access, criticize analyze and practically apply knowledge that help them gain life skills. Its competences and general outcomes are the expected outcomes to be attained by the learners through the acquisition of knowledge, skills, techniques and values which are very important for the total development of the individual and the nation as a whole.

Effective implementation of Outcome Based Education requires that the following principles be observed: clarity of focus, Reflective designing, setting high expectations for all learners and appropriate opportunities.

It is my sincere hope that this Outcome Based syllabus will greatly improve the quality of education provided at Grade 8 and 9 level as defined and recommended in various policy documents including *Educating Our Future`1996* and the *Zambia Education Curriculum Framework 2013*.

Chishimba Nkosha
Permanent Secretary
MINISTRY OF EDUCATION, SCIENCE, VOCATIONAL TRAINING AND EARLY EDUCATION.

Acknowledgements

The syllabus presented here is a result of broad-based consultation involving several stakeholders within and outside the education system. Many individuals, institutions and organizations were consulted to gather their views on the existing syllabus and to accord them an opportunity to make suggestions for the new syllabus. The Ministry of Education wishes to express heartfelt gratitude to all those who participated for their valuable contributions, which resulted in the development of this syllabus.

The Curriculum Development Centre worked closely with other sister departments and institutions to create this document. We sincerely thank the Directorate of Teacher Education and Specialized Services, the Directorate of Planning and Information, the Directorate of Human Resource and Administration, the Directorate of Open and Distance Education, the Examinations Council of Zambia, the University of Zambia, schools and other institutions too numerous to mention, for their steadfast support.

We pay special tribute to co-operating partners especially JICA and UNICEF for rendering financial technical support in the production of the syllabus.

C.N.M Sakala (Mrs)

Director-Standard and Curriculum

MINISTRY OF EDUCATION, SCIENCE, VOCATIONAL TRAINING AND EARLY EDUCATION

Rationale

Computer Studies is about how computers compute -it is not about learning how to use the computer. It is much more than computer programming. Computer Studies is the study of ways of representing objects and processes. It involves defining problems; analysing problems; designing solutions; and developing, testing, and maintaining programs. The term computer studies refers to the study of computer Studies, meaning computer and algorithmic processes, including their principles, hardware and software designs, their applications, and the impact they have on society.

The major focus of this subject is the development of programming skills, which are important for success in future postsecondary studies. Computer Studies is relevant for all students because it incorporates a broad range of transferable skills and techniques, including logical thinking, creative design, synthesis, and evaluation. It also teaches generically useful skills in such areas as communication, time management, organization, and teamwork.

Computer Studies will provide students with the knowledge and skills to understand the underpinnings of current computer technology and prepare them for emerging technologies. A foundation in this discipline will introduce students to the excitement and opportunities afforded by this dynamic field and will begin to prepare them for a range of rewarding careers.

The subject will build a strong foundation for those who wish to move on to further study and training in specialized areas such as, database analysis, computer science, education, computer engineering, software engineering, information technology, and game development.

General Outcomes

- Computer Studies is relevant for all students because it incorporates a broad range of transferable skills and techniques, including logical thinking, creative design, synthesis, and evaluation.
- Computer Studies teaches generically useful skills in such areas as communication, time management, organization, and teamwork.

Key Competences

- Understand and apply requirements of Computer Studies ethics and security:

Learners are expected to be competent in applying the new knowledge so acquired in advancing their daily lives of those of others. They should be able to use computer related software, gadgets and appliances without difficulty. They should also be able to understand the language that is normally used in computing.

Awareness of the risks of using the computer is also important at this level. Software and hardware security is also of great importance at this level.

- Share their knowledge and skills through the internet:
The Internet is a very powerful media of communication nowadays. After learning CS learners should be able to find useful information using the Internet. They should also be aware of the dangers of using the Internet. The correct use of email addresses for formal communications purposes is vital and. Collaborate and share knowledge and ideas with others.
- Create posters and other advertisement materials for the school events:
Learners are expected to be conversant in using multimedia software at this level of education. Learners should be able to correctly use word processing and presentation software.
- Carry out a simple Computer related project:
To enhance their understanding at this level learners will be expected to carry out simple computer related projects either in word processing or multimedia of computing.

Suggested Teaching Methodology

Computer Studies (CSt) syllabus offers a wide perspective of the subject. It is not restricted to computers but rather usage and application of a variety of technologies and its impact on society. The nature of the CSt subject is such that it will best be learnt within the context of application. As such, activities and projects that replicate real life should form an integral part of the teaching and learning methodologies. CSt is meant to prepare learners for the world of work, further education within the discipline and simply lifelong application of technology. Since CSt is extremely dynamic and also significantly always impacting on the way we live, learners should be encouraged to grapple with its complexities if they are to become competitive citizens in today's globalised world.

It is suggested that individual and/or group work/ or homework be given to learners to do during their spare time or prep. The computer laboratory maybe open to learners to do their assignments. However learners should never be left alone in the computer laboratory especially when it involves searching for information from the Internet.

The indicator of the achievement of these General outcomes will be based on acquisition of the skills through Assessment of the learner's competence on practical outcomes. The Sequence of the syllabus does not necessarily dictate the order in which topics are to be taught.

Principles and procedures

Learners need to develop skills to help them learn. Skills development should happen as a part of learners' learning experiences and the learning and practising of skills needs to occur in the context of units being taught.

Learning of Skills tends to be most effective when:

- learners go from the known to the unknown
- learners understand why it is necessary to gain mastery of specific skills
- skills are developed sequentially at increasing levels of difficulty
- learners identify and analyse the components of the skill
- there are frequent opportunities for practice and immediate feedback possibly frequent use of computer or computer embedded gadgets or tools.
- the skills being taught are varied in terms of amount and type, according to the needs and ability of learners

To teach skills effectively, a teacher needs to include learning activities that span from teacher-directed to student-centred learning, use groups of different sizes ranging from the whole class to small groups and use a range of teaching strategies which use higher-order skills as learners' progress.

Teaching and Learning Strategies for Computer Studies

Teaching and learning strategies for Computer Studies shall include:

Brainstorming - to stimulate creative thinking, Consequence charts - Cause and effect approach, Classroom displays (focuses on the current unit), Charts, Diagrams, Evaluation, Discussion, Guest speaker or visitor, educational tours and visits, Models, Photographs and pictures, Presentations, Problem solving - Learners are involved in identifying and working towards solutions, Reflective learning - thinking about what has been learnt, Research - to think of the questions you want learners to answer, and Project work.

Software

Throughout the course the recommended Operating System (OS) is Microsoft Windows 7 ®. Office 2007® or Microsoft Office 2010 ® will also be assumed for use to demonstrate word processing (Word), spread sheets (Excel), multimedia, and databases (Access).

Time and Period Allocation:

This syllabus covers a two-year course in Computer Studies and will require at least four 40 minute periods per week to complete (one double for practical and two single periods for theory).

Assessment Scheme

The assessment framework utilises various types of continuous assessment strategies. This is meant to determine learners' competences in the CS outcomes presented here. It is desired that the teacher as much as possible utilise assessment strategies that promote active learning by the learner. The case in point includes portfolios, observation sheets (to gauge certain competences), written assignments and reports, presentations, projects and experiments.

Computer Studies is a practical subject and as such this syllabus places a lot of emphasis on the use of common application packages. Object oriented programming languages may not be examined at this level. It will therefore be the schools' responsibility to ensure that relevant equipment and facilities needed by learners to meet the minimum requirements for assessment purposes are acquired.

The final assessment of Computer Studies is divided into three sections.

1. School based continuous assessment (SBCA): (20%)
2. Theory (Paper 1) - (External assessment by the examination board): 50%
3. Practical (Paper 2) - (External – Examination board): 30%

Computer Studies assessment at junior secondary school level covers the six categories of Bloom's Taxonomy with their respective weightings as shown below:

	SBCA	PAPER 1	PAPER 2	
SKILLS		PERCENTAGE (%)	SKILLS	PERCENTAGE (%)
Knowledge	3	10	Report	5
Comprehension	3	5	Computer Project	15
Application	5	10	Demonstration	10
Analysis	3	5		
Synthesis	3	10		
Evaluation	3	10		
TOTAL	20	50		30

It is therefore important that the teacher well balances the teaching of the content subject accordingly. For the full details on paper 2 project work check the appendix (page vii).

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GRADE 8

General Outcomes

- Demonstrate an understanding of the concept of **safety and misuse** when using technology
- **Operate and take care** of a computer and its common peripherals
- Use a computer to **accomplish given tasks**
- **Appreciate** the role computers play in everyday life.
- **Demonstrate** understanding and operating skills required for a variety of CS
- **Communicate** using appropriate multimedia to interact with others.
- Enable learners attain **Entrepreneurship** skills for survival

Key Competences

- Understand and apply requirements of CS ethics and security.
- Share their knowledge and skills through the internet
- Create posters and other advertisement materials for the school events.
- Ensure appropriate email address is used for formal communications.
- Carry out a detailed research programme related to computing.
- Collaborate and share knowledge and ideas with others.

GRADE 8 SYLLABUS

TOPIC	SUB TOPIC	SPECIFIC OUTCOME	KNOWLEDGE	SKILLS	VALUE
8.1 Introduction to Computer Studies	8.1.1 Terminologies 8.1.2 Parts of a computer 8.1.3 Input-process-output operations	8.1.1.1 Explain the meaning of the terms hardware, software, Information, communication and communications technology 8.1.1.1 Describe the main parts of a computer 8.1.3.1 State the three basic operations in a computer system. 8.1.3.2 Identify a computer as a general purpose machine that operates under different sets of instructions for various uses 8.1.3.3 Relate computer parts to the basic operations	<ul style="list-style-type: none"> • Hardware (Monitor, Keyboard, Mouse, Central Processing Unit-CPU, Uninterruptible Power Supply-UPS, printer, scanner), Software (Various programmes such as the Operating system, Word processors) • Difference between data and information • Computer as a general purpose machine • Components of a computer system (i.e. central processing unit – CPU, input devices, storage devices & output devices) • Uses of main parts of computer • Advantages and 	<ul style="list-style-type: none"> • Observation • Identification of computer parts • Switching on and switching off a computer system. • Comparing roles of the computer parts • Connecting a computer to a power cable and peripherals • Interpretation of some computer system acronyms 	<ul style="list-style-type: none"> • Computer appreciation • Team work in identifying parts of the computer. • Safety consciousness in handling computer

TOPIC	SUB TOPIC	SPECIFIC OUTCOME	KNOWLEDGE	SKILLS	VALUE
			<p>disadvantages of a computer system</p> <ul style="list-style-type: none"> • Appreciating different types of storage media 		
8.2 Basic Operations	8.2.1 Health & safety 8.2.2 Care for Computer Systems 8.2.3 Computers & peripherals 8.2.4 Security & Viruses 8.2.5 Types of user interfaces	8.2.1.1 Assume correct posture to avoid injuries. 8.2.2.1 Demonstrate the need to take care of computer and storage media to prevent data loss 8.2.3.1 Power up and down of computers and various technologies and peripherals correctly 8.2.3.2 Perform basic computer operations 8.2.4.1 Explain the consequences of theft of computers or other portable ICT devices and computer viruses. 8.2.5.1 Interact with icons and menus in a Graphic User Interface (GUI) environment.	<ul style="list-style-type: none"> • Assuming correct posture to avoid injuries. • Safety issues associated with ICT use(e.g. securing power cables and avoiding liquids and dust near computers.) • Sequence of powering up and down of various technologies(i.e. TV, cell phone, printer, scanner, etc) • Basic computer operations (e.g. Moving cursor, clicking on icon, using pull-down menus, ejecting disks etc) • Consequences of theft of computers or other portable 	<ul style="list-style-type: none"> • Manipulation of the keyboard efficiently • Identification of home keys on the keyboard. • Connecting computers to power cables and peripherals. • Comparing and contrasting roles of the computer system. • Securing computer 	<ul style="list-style-type: none"> • Team work in identifying computer peripherals. • Appreciation of antiviruses.

TOPIC	SUB TOPIC	SPECIFIC OUTCOME	KNOWLEDGE	SKILLS	VALUE
			ICT devices <ul style="list-style-type: none"> Using different types of user interfaces Pros and cons of different types of interface (command driven and graphical user interfaces) 		
8.3 Computers in everyday life	8.3.1 Household, Entertainment and recreation appliances 8.3.2 Office Equipment 8.3.3 Industrial and Commercial Applications of computers 8.3.4 Computer based learning	8.3.1.1 Identify and demonstrate the use of household appliances and devices that are controlled by embedded microprocessors 8.3.2.1 State common uses of office equipment 8.3.3.1 Exhibit knowledge of using computers in Industry 8.3.4.1 Identify the role computers play in aiding learning 8.3.4.2 Identify social and economic effects of computers	<ul style="list-style-type: none"> Household appliances and devices that are controlled by embedded microprocessors (e.g. Washing machines, microwave ovens, digital watches & cameras) Common uses of office equipment (Computers, Printers, Fax machines, Telephone systems, Liquid Computer Device -LCD projectors, scanners etc) Computers in Industry (e.g. 	<ul style="list-style-type: none"> Identification use of household appliances and devices that are controlled by embedded microprocessors Manipulation of computer related appliances. Demonstration of use of household appliances and devices that are controlled by embedded microprocessors. Identification of social and economic effects of computers 	<ul style="list-style-type: none"> Appreciation of use of computer in industries and homes Skilfulness in using computers in everyday life. Inquisitiveness in using computers.

TOPIC	SUB TOPIC	SPECIFIC OUTCOME	KNOWLEDGE	SKILLS	VALUE
			<p>chemical processing plants i.e. Indeni, Mining, Liming and Cement, beverage manufacturing / Financial institutions i.e LUSE, Health, Ticket reservation systems, defence and security etc)</p> <ul style="list-style-type: none"> • Computers as aids for learning (e.g. Self placed interactive lessons that effectively use multimedia) • Social and economic effects of computers (e.g. security concerns, deskilling, failure of systems, dependability on systems, human rights violation and computer misuse) 		
8.4 Productivity Tools (Word	8.4.1 Introduction to Windows 8.4.2 Key in and Edit Text	8.4.1.1 Demonstrate how to operate Windows 8.4.1.2 Demonstrate how to start and quit a program	<ul style="list-style-type: none"> • Familiarise with the main functions of the keyboard, shift and control 	<ul style="list-style-type: none"> • Inputting data correctly in a word processor. • Icon identification 	<ul style="list-style-type: none"> • Productivity in using word processor. • Efficiency in text

TOPIC	SUB TOPIC	SPECIFIC OUTCOME	KNOWLEDGE	SKILLS	VALUE
Processing)	8.4.3 Text Manipulation and Formatting 8.4.4 Proof Reading 8.4.5 Print Preview and Printing 8.4.6 Saving Files 8.4.7 Drawing Simple Graphics	8.4.2.1 Demonstrate text input, type over, insertion of words & symbols, deletion and reformatting 8.4.3.1 Demonstrate copying, deleting and moving blocks of text within a document 8.4.3.2 Illustrate the use of a clipboard 8.4.3.3 Use the undo command to reverse the effect of the last action 8.4.3.4 Use the redo command to reverse the undo action 8.4.4.1 Check the spelling of words in a document against a built-in dictionary 8.4.4.2 Describe the limitations of the spelling checker 8.4.5.1 Use the print preview and print a document 8.4.6.1 Demonstrate how to save a file to a specific location or media 8.4.7.1 Create graphics using basic graphic elements	keys (Include: keyboard shortcuts to windows operations) • start and quit a program • Text input, type over, insertion of words & symbols, deletion and reformatting • Copying, deleting and moving blocks of text within a document • Clipboard (temporary storage area in the memory) • Undo command to reverse the effect of the last action • Redo command to reverse the undo action • Spelling of words in a document against a built-in dictionary (ie Thesaurus) • Limitations of the spelling checker • Print preview and	of productivity tools. • Manipulation of text in the word processor. • Agility in typing text • Text management (inputting of text, formatting of text) • Accuracy in entering data in a word processor.	manipulation and editing. • Effectiveness in the use of productivity tools. • Entrepreneurship using productivity tools. • Appreciation of productivity tools.

TOPIC	SUB TOPIC	SPECIFIC OUTCOME	KNOWLEDGE	SKILLS	VALUE
			<ul style="list-style-type: none"> print a document Saving a file to a specific location or media graphics using basic graphic elements (e.g. lines, curves, sectors, polygons, circles, ovals, squares and rectangles) 		
8.5 Productivity Tools (Spread Sheets)	8.5.1 Introduction to Spreadsheet. 8.5.2 Entering and editing data 8.5.3 Adding Formula 8.5.4 Saving and Printing	8.5.1.1 Demonstrate an understanding of the concept of worksheet and workbook 8.5.1.2 Explain the common features of a spreadsheet 8.5.1.3 Demonstrate the application of a spreadsheet in everyday life 8.5.2.1 Enter and manipulate data using spread sheets for a specific purpose 8.5.2.2 Illustrate the skill of entering text & numbers in specified cells 8.5.2.3 Delete and edit text and numbers in cells as required 8.5.3.1 Enter data, numbers and apply simple formula with a range not more than ten	<ul style="list-style-type: none"> Worksheet and workbook Common features of a spreadsheet (cells, formula bars) Application of a spreadsheet in everyday life (i.e. Student records, business stock, accounting, invoices) Entering and manipulating data using spread sheets Deleting and editing text and numbers in cells as required 	<ul style="list-style-type: none"> Loading of a single or more spreadsheets Switching between worksheets and between workbook Application of addition, subtraction, multiplication and division symbols with formulae Manipulation Application of quick numerical computations Accuracy in the use of spreadsheet. Designing of a required spreadsheet. 	<ul style="list-style-type: none"> Accuracy in using spreadsheet. Appreciation of use of spreadsheet in making calculations Quality work in the use of spreadsheet

TOPIC	SUB TOPIC	SPECIFIC OUTCOME	KNOWLEDGE	SKILLS	VALUE
		<p>cell addresses</p> <p>8.5.3.2 Design, create and modify a spread sheet for a specific purpose with a maximum of five cell addresses</p> <p>8.5.4.1 Save to specified folder and print a spread sheet</p> <p>8.5.4.2 Change magnification to appropriate percentage to print a given spread sheet</p>	<ul style="list-style-type: none"> • Entering text and numbers in specified cells • Entering data, numbers and applying simple formula with a range not more than ten cell addresses (i.e. addition, subtraction, multiplication and division) • Designing, creating and modifying a spread sheet for a specific purpose (using functions like sum, product, average and quotient) with a maximum of five cell addresses • Saving to specified folder and print a spread sheet • Changing magnification to appropriate percentage to print a given spread 		

TOPIC	SUB TOPIC	SPECIFIC OUTCOME	KNOWLEDGE	SKILLS	VALUE
			sheet formulae		
8.6 Productivity Tools (Desktop publishing)	8.6.1 Publishing basics and Features 8.6.2 Pre-designed layouts or Templates 8.6.3 Fonts 8.6.4 Elementary Graphics 8.6.5 Colours and Fonts 8.6.6 Clip art/Re-designed graphics	8.6.1.1 Define desktop publishing 8.6.1.2 Identify the two types of a publication 8.6.1.3 Compare different features of desktop publishing and word processing software 8.6.1.4 Generate frames in which text and graphics are placed 8.6.1.5 Edit the layout of a publication 8.6.2.1 Input text directly into a publication 8.6.2.2 Import text from word processing document into a publication 8.6.3.1 Apply the three elements of fonts; namely typeface, style and point size 8.6.4.1 Create graphics using basic graphic elements 8.6.5.1 Select colours for the outlines and fill of objects from the palette 8.6.5.2 Integrate Text into graphic design 8.6.6.1 Retrieve and edit pre-designed graphics to compose a picture 8.6.6.2 Identify how productivity tools complement each other	<ul style="list-style-type: none"> Desktop publishing (i.e. typesetting, and layout designs using desktop computers) Types of a publication (i.e. text and graphics) Features of desktop publishing and word processing software Frames in which text and graphics are placed Editing the layout of a publication Inputting text into a publication Importing text from word processing document into a publication Three elements of fonts; namely typeface, style and point size Graphics using basic graphic 	<ul style="list-style-type: none"> Identification of productivity tools. Manipulation of productivity tools Accuracy in the use of productivity tools. Loading a publishing package Switching between two or more loaded publishing packages 	<ul style="list-style-type: none"> Entrepreneurship in the use of productivity tools. Accuracy in the use of productivity tools. Teamwork in designing graphics Quality work in using desktop publishing. Appreciation of the use of desktop publishing.

TOPIC	SUB TOPIC	SPECIFIC OUTCOME	KNOWLEDGE	SKILLS	VALUE
			<p>elements (e.g. lines, curves, sectors, polygons, circles, ovals, squares and rectangles)</p> <ul style="list-style-type: none"> • Colours for the outlines and fill of objects from the palette • Integrating Text into graphic design • Retrieving and editing pre-designed graphics to compose a picture • Identify how productivity tools compliment each other 		
8.7 Networks	8.7.1 Networking 8.7.2 The Internet 8.7.3 Web browsers 8.7.4 Using search engines 8.7.5 Email	8.7.1.1 networking computers in different locations (i.e. share software, documents, databases & other resources) 8.7.1.2 Differentiate between Wired and wireless networks 8.7.2.1 Display proficiency in accessing information using a local area network (LAN), and a Wide area	<ul style="list-style-type: none"> • networking computers in different locations (i.e. share software, documents, databases & other resources) • Differentiate between Wired and wireless 	<ul style="list-style-type: none"> • Connecting a network cable to a computer • Accessing differer media files from external storage devices and intern storage devices • Launching a web browser • Entering default 	<ul style="list-style-type: none"> • Understanding of types of ports (connection points) • Appreciation of internal storage media and externa storage media • Appreciation that information is also stored on remote computers which

TOPIC	SUB TOPIC	SPECIFIC OUTCOME	KNOWLEDGE	SKILLS	VALUE
		<p>network (WAN)</p> <p>8.7.2.2 Upload and download text, image, audio and video files</p> <p>8.7.2.3 Illustrate ability to search the web for specific information.</p> <p>8.7.3.1 Recognise web browsers as a tool to accessing web pages on the internet (e.g. Firefox, Safari, Internet Explorer etc)</p> <p>8.7.3.2 Demonstrate how to open a web browser and go to specific Universal Resource Locator (URL)</p> <p>8.7.4.1 Define a search engine and what it is used for</p> <p>8.7.4.2 Use a search engine to look for information on the internet</p> <p>8.7.5.1 Explain what email is used for</p>	<p>networks</p> <ul style="list-style-type: none"> • Display proficiency in accessing information using a local area network (LAN), and a Wide area network (WAN) • Upload and download text, image, audio and video files • Illustrate ability to search the web for specific information. • Recognise web browsers as a tool to accessing web pages on the internet (e.g. Firefox, Safari, Internet Explorer etc) • Demonstrate how to open a web browser and go to specific Universal Resource Locator (URL) • Define a search engine and what it 	<p>web sites and edit the sites to different ones</p> <ul style="list-style-type: none"> • Retrieving (Searching) specific information from the Internet 	<p>require internet connection to access information</p>

TOPIC	SUB TOPIC	SPECIFIC OUTCOME	KNOWLEDGE	SKILLS	VALUE
			<p>is used for</p> <ul style="list-style-type: none"> • Use a search engine to look for information on the internet • 8.7.5.1 Explain what email is used for 		
8.8 Multimedia Files	8.8.1 Introduction to multimedia files 8.8.2 Graphics 8.8.3 Video and Audio	8.8.1.1 Introduction to multimedia files. 8.8.2.1 Create a multimedia presentation incorporating visual image features (i.e. clip art, video clips, sound and animated images) 8.8.3.2 Access available databases for images, sound clips or recorded voice to support communication 8.8.3.3 Support communications by controlling the flow of a presentation (i.e. screen transitions, animating text & graphics)	<ul style="list-style-type: none"> • Differences between various types of media (video, sound, animations) • Search for locally available multimedia files on the computer • Controlling presentations using arrow keys 	<ul style="list-style-type: none"> • Loading a multimedia package • Adding media clip to a presentation 	<ul style="list-style-type: none"> • Value enhancing physically challenged learners • Productivity in using multimedia files. • Efficiency in the use of multimedia • Effectiveness in the use video and audio on the computer system.

GRADE 9

General Outcomes

- Demonstrate an understanding of the concept of **safety and misuse** when using technology
- **Operate and take care** of a computer and its common peripherals
- Use a computer to **accomplish given tasks**
- **Appreciate** the role computers play in everyday life.
- **demonstrate** understanding and operating skills required for a variety of ICTS
- **Communicate** using appropriate multimedia to interact with others.
- Enable **learners attain** Entrepreneurship skills for survival

Key Competences

- Understand and apply requirements of ICT ethics and security.
- Share their knowledge and skills through the internet
- Create posters and other advertisement materials for the school events.
- Ensure appropriate email address is used for formal communications.
- Carry out a detailed research programme related to computing.
- Collaborate and share knowledge and ideas with others.

GRADE 9 SYLLABUS

TOPIC	SUB TOPIC	SPECIFIC OUTCOME	KNOWLEDGE	SKILLS	VALUE
9.1 Introduction to Computers	9.1.1 Terminology 9.1.2 Peripheral devices 9.1.3 Input-process-output operations	9.1.1.1 Define the terminologies of a computer system. 9.1.2.1 Connecting peripheral devices to their appropriate computer ports 9.1.2.1 Recognise that the speed of a CPU is measured in Megahertz (MHz) or Gigahertz (GHz) 9.1.3.1 Identify meaningful information as a result of processed input data by the computer 9.1.3.2 Appreciate that certain devices are both input as well as output (e.g. touch screens)	<ul style="list-style-type: none"> Computer terminology; peripheral device PDAs, GB, MHz, GHz, BIT, BYTES, Megabytes etc Defining basic computer terminology Peripheral devices Units of the processing speed and their relationship Units of storage – BIT, Byte, Megabyte, Gigabyte and their conversions. Input, process and output devices 	<ul style="list-style-type: none"> Connecting peripheral devices to their appropriate computer ports Converting of bytes into Bits and converting Bits into Bytes, Kilobytes & Megabytes Interpreting the various files sizes Relating file size to storage space 	<ul style="list-style-type: none"> Appreciating the various types of ports (serial, parallel & USB) Relation between processing speed and file size Appreciation of limitations of storage media regarding size
9.2 Basic Operations	9.2.1 Unresponsive computer 9.2.2 Security & Viruses 9.2.3 Copyright	9.2.1.1 Identify how to shut down an unresponsive computer 9.2.2.1 Understand why usernames and	<ul style="list-style-type: none"> How to rectify program failure of booting and shutting down. Security issues associated with 	<ul style="list-style-type: none"> Shutting down unresponsive computer system. Installation and launching of Antivirus software 	<ul style="list-style-type: none"> Minimizing the effects of computer system failure Avoiding compromising the system integrate

TOPIC	SUB TOPIC	SPECIFIC OUTCOME	KNOWLEDGE	SKILLS	VALUE
	9.2.4 Storage media	<p>passwords are used on computers</p> <p>9.2.2.2 Identify and apply safety procedures, such as antivirus scans and virus checks in maintaining data integrity</p> <p>9.2.3.1 Know how to check the ID number for a software product</p> <p>9.2.3.2 Define the terms freeware, share-ware and end-user licence agreement</p> <p>9.2.4.1 Describe the relationship between different measures of storage media capacities (i.e. kilobyte, megabyte, gigabyte)</p>	<p>ICT use</p> <ul style="list-style-type: none"> Identify licensed software installed on a computer Understand the difference between open source software and proprietary software Identify types of memory (Include: primary and secondary memory) 	<ul style="list-style-type: none"> Verifying the authenticity of software Inserting memory cards in computers, digital cameras, cell phones & related devices. Converting memory size from one type to the other. Calculation of memory sizes and their implications on storage. 	<ul style="list-style-type: none"> Enhancement of computer system Appreciating copyright laws Appreciating the vulnerability of memory cards on portable and hand-held devices
9.3 Information technology in everyday life	<p>9.3.1 Household appliances</p> <p>9.3.2 Computer based learning (CBL)</p> <p>9.3.3 Computers in banking and e-commerce</p> <p>9.3.4 Point of Sale</p> <p>9.3.5 Magnetic and smart cards</p>	<p>9.3.1.1 Describe particular technologies being used for specific purposes in the home</p> <p>9.3.1.2 Illustrate, using examples, how information & communication networks create a global community (e.g. cell phones, internet, skype etc.)</p>	<ul style="list-style-type: none"> How to connect household equipment (connecting a decoder, DVD player, Hi-Fi system to a TV) How to connect office equipment (connecting LCD projectors, scanners, 	<ul style="list-style-type: none"> Connecting of household equipment (connecting a decoder, dvd player, Hi-Fi system to a TV) Connecting of office equipment (connecting LCD projectors, scanners, printers, digital cameras, cell phones to computers) Making calls & Saving phone numbers on cell 	<ul style="list-style-type: none"> Avoiding damage to household and office equipment. Maximising the use of household equipment Avoiding damage to office equipment Knowledge of record keeping Communicating

TOPIC	SUB TOPIC	SPECIFIC OUTCOME	KNOWLEDGE	SKILLS	VALUE
		9.3.1.3 Demonstrate an understanding of new and emerging communication systems	printers, digital cameras, cell phones to computers)	phones	using internet technologies
		9.3.2.1 Identify different types of CBL software (e.g. drill practice, tutorial, simulation, problem solving etc.)	<ul style="list-style-type: none"> Appreciating the various communication technologies 	<ul style="list-style-type: none"> Starting a online conversation (Include: Skype) Signing in oneself to a particular social network (e-mail, Skype, Facebook, Twitter) Manipulating accounts (include: Creating, changing, editing and deleting user accounts) 	<ul style="list-style-type: none"> Managing access to computer resources (stocks & price lists) Integration of Computers in other learning areas.
		9.3.3.1 Recognise the use of computers to organise, retrieve and process data	<ul style="list-style-type: none"> Examples of CBL Software Knowledge of social networks Knowledge of directory, folders and files 		
		9.3.3.2 Appreciate the linking of computers in different locations to enable electronic fund transfer (e.g. GIRO, NETS, Automated Teller Machines-ATMs etc.)	<ul style="list-style-type: none"> How to conduct online transaction Discussing the pro and cons of e-commerce Appreciate the use of bar codes 		
		9.3.3.3 Describe e-commerce and the process of purchasing goods and services online	<ul style="list-style-type: none"> Fundamental information contained on the bar code 		
		9.3.3.4 List advantages & disadvantages of e-commerce	<ul style="list-style-type: none"> The link between the price list and the bar code 		
		9.3.4.1 State common uses of computers in the supermarket	<ul style="list-style-type: none"> Security in business transactions 		
		9.3.4.2 Identify the			

TOPIC	SUB TOPIC	SPECIFIC OUTCOME	KNOWLEDGE	SKILLS	VALUE
		<p>significance of using bar codes in the super market (i.e. identifying products, statistics and keeping track of sold items)</p> <p>9.3.5.1 Recognise the use of PIN (personal identification number) as a security measure to initiate transaction using magnetic card</p> <p>9.3.5.2 Describe the benefits of the trend towards cashless electronic transaction</p>	<p>among workers</p> <ul style="list-style-type: none"> • Appreciate stock management 		
9.4 Productivity Tools (Word Processing)	<p>9.4.1 Keyboard skills</p> <p>9.4.2 Document setup and layout</p> <p>9.4.3 Search and replace</p> <p>9.4.4 Copying text from other document windows</p> <p>9.4.5 Pagination</p> <p>9.4.6 Page formatting</p> <p>9.4.7 Finding</p>	<p>9.4.1.1 Exhibit mastery of the keyboard keys including function keys and touch typing</p> <p>9.4.2.1 Use the tab key to indent the first line of the paragraph</p> <p>9.4.2.2 Demonstrate competence in creating tables, inserting and deleting rows & columns</p> <p>9.4.2.3 Insert objects (e.g. Clip art, mathematical formula etc)</p> <p>9.4.3.1 Use the search command to locate</p>	<ul style="list-style-type: none"> • How to use function keys (F1 to F12) and combination keys • How to create paragraphs in word processing • How to create, edit and delete tables using the table insert • How to Integrate clip art and mathematical formulae in word processing 	<ul style="list-style-type: none"> • Using function keys (F1 to F12) and combination keys • Creating paragraphs in word processing • creating, editing and deleting tables using the table insert • Integrating clip art and mathematical formulae in word processing document • Finding or searching command to locate a specified word • Replacing a located word 	<ul style="list-style-type: none"> • Productivity (letter writing, minutes, assignments etc) • Efficiency in the use of productivity tools. • Entrepreneurship (letter and document writing, minutes, assignments etc) • Effectiveness in the use of productivity tools.

TOPIC	SUB TOPIC	SPECIFIC OUTCOME	KNOWLEDGE	SKILLS	VALUE
	and file retrieval	<p>specified text quickly in a document</p> <p>9.4.3.2 Use the search and replace command to carry out replacement of specified text quickly in a document</p> <p>9.4.4.1 Copy blocks of text from one document window to another</p> <p>9.4.5.1 Demonstrate insertion of page numbers of any given format</p> <p>9.4.5.2 Insert page and section breaks to organise text in a document</p> <p>9.4.6.1 Use the page set up command to set margins, paper size and page orientation</p> <p>9.4.8.1 Demonstrate ability to save file to a specified storage drive or device</p> <p>9.4.8.2 Navigate to a particular drive and retrieve a specific file</p> <p>9.4.8.3 Delete file(s) and retrieve from the recycle bin</p>	<p>document</p> <ul style="list-style-type: none"> • How to use find or search command to locate a specified word • How to replace a located word • How to use copy / cut and paste • How to insert roman numerals and denary page numbers in a word document • How to insert page breaks • How to set page margins, paper size and page orientation before printing a document • How to use save and save as when saving a file to a specified storage external or internal storage devices • How to delete a file and a folder containing files 	<ul style="list-style-type: none"> • Inserting roman numerals and denary page numbers in a word document • Inserting page breaks • Inserting page margins, paper size and page orientation before printing a document • Saving and saving as commands when saving a file to a specified storage external or internal storage devices • Deleting a file and a folder containing files and how to retrieve a deleted file that was on the computer from the recycle bin 	

TOPIC	SUB TOPIC	SPECIFIC OUTCOME	KNOWLEDGE	SKILLS	VALUE
			<p>and how to retrieve a deleted file on the computer from the recycle bin</p> <ul style="list-style-type: none"> • Import the drawn pie chart from a spreadsheet into a word processor 		
9.5 Productivity Tools (Spread Sheets)	9.5.2 Amending a spreadsheet 9.5.3 Formatting cells 9.5.4 Sorting data 9.5.5 Entering and applying formula 9.5.7 Charts	9.5.2.1 Insert and delete columns and rows as required 9.5.3.1 Change column width and row height as required 9.5.3.2 Change number of decimal places displayed in cells as required 9.5.3.3 Change text orientation within a cell 9.5.4.1 Sort and filter data as specified 9.5.5.1 Enter data, numbers and apply more advanced formula (i.e. multiplication, sum & average functions) 9.5.6.1 Change percentage specification to print a given spreadsheet 9.5.7.1 Use chart wizard to	<ul style="list-style-type: none"> • How to draw pie chart using a spreadsheet. • How to insert and delete columns and rows as required • How to change column width and row height • How to change decimal places in cells • How to change text orientation in a particular cell or a group of cells • How to apply advanced functions (e.g. SUM, AVERAGE, IF, MAX, MIN, 	<ul style="list-style-type: none"> • Drawing pie chart using a spreadsheet. • Linking spreadsheet to word document using hyperlinks • Importing the drawn pie chart from a spreadsheet into a word processor • Sorting data in a pre-determined sequence • Filtering of data in a spreadsheet • Interpreting numerical data into graphs or charts • Application of mathematical concepts. 	<ul style="list-style-type: none"> • Productivity in budgeting, accounting, sales forecasting, stock management. • Efficiency in using spreadsheet. • Entrepreneurship in the use of spreadsheet in tracking a business. • Effectiveness of spreadsheet.

TOPIC	SUB TOPIC	SPECIFIC OUTCOME	KNOWLEDGE	SKILLS	VALUE
		<p>create bar, line and pie charts of selected data</p> <p>9.5.7.2 Print a chart</p>	<p>COUNT, COUNTA, SUMIF,)</p> <ul style="list-style-type: none"> • How to change percentage specification using zoom facility • How to use chart wizard • How to link spreadsheet to word document using hyperlinks • How to export the drawn pie chart from a spreadsheet into a word processor • How to print preview and print • How to paginate using page break preview 		
9.6 Productivity Tools (Desktop publishing)	<p>9.6.1 Charts , Diagrams and pictures</p> <p>9.6.2 Text wrapping</p> <p>9.6.3 Importing Text</p> <p>9.6.4</p>	<p>9.6.1.1 Add charts, diagrams and pictures</p> <p>9.6.1.2 Edit, resize & crop charts, diagrams and pictures</p> <p>9.6.2.1 Demonstrate how to wrap text around charts , diagrams &</p>	<ul style="list-style-type: none"> • Identifying how productivity tools compliment each other • Demonstrating wrapping of text around charts, diagrams & 	<ul style="list-style-type: none"> • Identifying pre-designed layouts or template for appropriate tasks • Modifying already created publications • Enhancing objects in publications • Saving and printing 	<ul style="list-style-type: none"> • Entrepreneurship in the use of Desktop publishing. • Effectiveness use of Desktop publishing.

TOPIC	SUB TOPIC	SPECIFIC OUTCOME	KNOWLEDGE	SKILLS	VALUE
	Manipulation of pre-designed templates 9.6.5 Colours and Fonts	<p>9.6.2.2 pictures Generate frames in which charts, diagrams & pictures are placed</p> <p>9.6.3.1 Import text from other programs (word processor & spreadsheet)</p> <p>9.6.3.2 Import charts, diagrams & pictures from other programs</p> <p>9.6.4.1 Create calendars, notices, fliers, brochures, newsletters, resumes using templates</p> <p>9.6.4.2 Edit manipulated templates</p> <p>9.6.5.1 Select colours for the outlines and fill of objects from the palette</p>	<p>pictures</p> <ul style="list-style-type: none"> • Understanding how to generate charts, diagrams & pictures • Distinguishing between importing and exporting of publications • Differentiating the use of various templates • Modifying created publications • Enhancing objects in a publication through the use fonts & colours 	<p>previewing publications</p>	
9.7 Networking & the Internet	<p>9.7.1 Networking</p> <p>9.7.2 The Internet</p> <p>9.7.3 Web browsers</p> <p>9.7.4 Using search engines</p> <p>9.7.5 Email</p>	<p>9.7.1.1 List the advantages of group working (i.e. shared files, applications and printers</p> <p>9.7.2.1 Display understanding of the terms local area network (LAN) and Wide area network (WAN), Personal</p>	<ul style="list-style-type: none"> • Managing of shareable resources (files, applications, & printers) • Distinguishing various types of networks using examples (e.g. computer network, cellular 	<ul style="list-style-type: none"> • Sharing resources using sharing facility • Deriving appropriate web addresses from institution/organisation/company names based on services provided (e.g. org, edu, ac, co, gov etc) • Starting, refreshing and terminating web search • Utilising internet 	<ul style="list-style-type: none"> • Reduction in computer hardware and software costs • Sourcing of information from a broader scope • Reduction in communication costs through email and other free internet services.

TOPIC	SUB TOPIC	SPECIFIC OUTCOME	KNOWLEDGE	SKILLS	VALUE
		<p>Area Network (PAN), Storage Area Network (SAN), Metropolitan Area Network (MAN), Wi-Fi.</p> <p>9.7.2.2 Describe the difference between an intranet and an extranet</p> <p>9.7.2.3 Differentiate between World Wide Web and the internet</p> <p>9.7.3.1 Recognise components of a Universal Resource Locator (URL)</p> <p>9.7.3.2 Show how to stop a web page from downloading</p> <p>9.7.3.3 Illustrate how to refresh, move back and forward</p> <p>9.7.4.1 Appreciate various services available on the internet (e.g. On-line news, shopping etc.)</p> <p>9.7.5.1 Explain the make up and structure of an email address</p> <p>9.7.5.2 Send and reply to an email message</p>	<p>network (hotspots), satellite network.</p> <ul style="list-style-type: none"> • Distinguishing between the two main types of Local Area Networks (Intranets & Extranets) • Relating the World Wide Web (global web pages) to the Internet (technologies, infrastructure & protocols) • The relationship between URL and Internet surfing • Understanding the navigation patterns of web pages • Appreciating the communication and information services provided by the Internet • Understanding 	<p>communication tools (Skype, twitter, Facebook,</p> <ul style="list-style-type: none"> • Creating of an email address • Sending and receiving a message through email. 	

TOPIC	SUB TOPIC	SPECIFIC OUTCOME	KNOWLEDGE	SKILLS	VALUE
			the syntax of email addresses		
9.8 Multi media files	9.8.1 Digitising images 9.8.2 Video & Audio	9.8.1.1 Create digital images using a scanner and or a digital camera 9.8.1.2 Edit digitised images by cropping, enhancing pixels, colour etc 9.8.1.3 Saving created images 9.8.2.1 Record video & audio 9.8.2.2 Save video and audio files	<ul style="list-style-type: none"> • Creating digital images using scanners & cameras • Editing and enhancing scanned and digitised images • Saving images with appropriate file extensions • Recording Video & Audio using digital camera & or microphone • Naming audio and video files with appropriate file extension • Appreciate the different media file extensions • Understanding the syntax of media file naming 	<ul style="list-style-type: none"> • Creating digital images using scanners and cameras • Editing and enhancing scanned and digitised images • Appropriately saving of file names and file extensions • Recording video & audio using multimedia related technology • Naming audio & video files with appropriate file names & extension. 	<ul style="list-style-type: none"> • Entrepreneurship in the use of multimedia. • Productivity in the use of multimedia. • Efficiency in the use of multimedia. • Inquisitiveness in the use of multimedia.

Grades 8 and 9 Computer Studies Scope and Sequence

The table below shows the coverage of the syllabus in Computer Studies in Grades 8 and 9. It is important for a teacher to refer to this table from time to time to know the knowledge that the learners already have or need to have at various levels of learning of the subject.

TOPIC	GRADE 8	GRADE 9
Introduction to Computer Studies	<ul style="list-style-type: none"> • Terminology of computer hardware. • Parts of a computer • Input-process-output operations 	<ul style="list-style-type: none"> • Terminology of a computer system. • Peripheral devices • Input-process-output operations
Basic Operations	<ul style="list-style-type: none"> • Health & safety • Care for Computer Systems • Computers & peripherals • Security & Viruses • Types of user interfaces 	
Generic Application Software	<ul style="list-style-type: none"> • Introduction to Windows • Key in and Edit Text • Manipulation and Formatting • Proof Reading • Print Preview and Printing • Saving Files • Drawing Simple Graphics 	<ul style="list-style-type: none"> • Keyboard skills • Document setup and layout • Search and replace • Copying text from other document windows • Pagination • Page formatting • Finding and file retrieval
	<ul style="list-style-type: none"> • Introduction to Spreadsheet • Entering and editing data • Adding Formula • Saving and Printing 	<ul style="list-style-type: none"> • Amending a spread sheet • Formatting cells • Sorting data • Entering and applying formula • Charts

TOPIC	GRADE 8	GRADE 9
	<ul style="list-style-type: none"> • Publishing basics and Features • Pre-designed layouts or Templates • Fonts Elementary Graphics • Colours and Fonts • Clip art/Re-designed graphics 	<ul style="list-style-type: none"> • Charts , Diagrams and pictures • Text wrapping • Importing Text • Manipulation of pre-designed templates • Colours and Fonts
Systems and Communications	<ul style="list-style-type: none"> • Introduction to multimedia files • Graphics • Video and Audio 	<ul style="list-style-type: none"> • Digitising images • Video & Audio
Types of Computer System		<ul style="list-style-type: none"> • Networking • The Internet • Web browsers • Using search engines • Email
Computer Application	<ul style="list-style-type: none"> • Household, Entertainment and recreation appliances • Office Equipment • Industrial and Commercial Applications of computers • Computer based learning 	<ul style="list-style-type: none"> • Household appliances • Computer based learning (CBL) • Computers in banking and e-commerce • Point of Sale • Magnetic cards and smart cards
Social and Economic Implications of the use of Computers		<ul style="list-style-type: none"> • Unresponsive computer • Security & Viruses • Copyright • Storage media

Primary and Secondary School Computer Laboratory and hardware recommendations

PCs are required to teach Computer Studies and Computer Science subjects at both Primary and secondary level.

Effective teaching of computer related subjects could take place with computers based in a dedicated computer laboratory (Micro Lab). It is recommended that the laboratory should be air conditioned with hard floor. The estimated cost for building a Micro lab is beyond the jurisdiction of CDC, let alone faculty of natural sciences, but the CDC can advise the Ministry of Education of the specifications needed.

Hardware

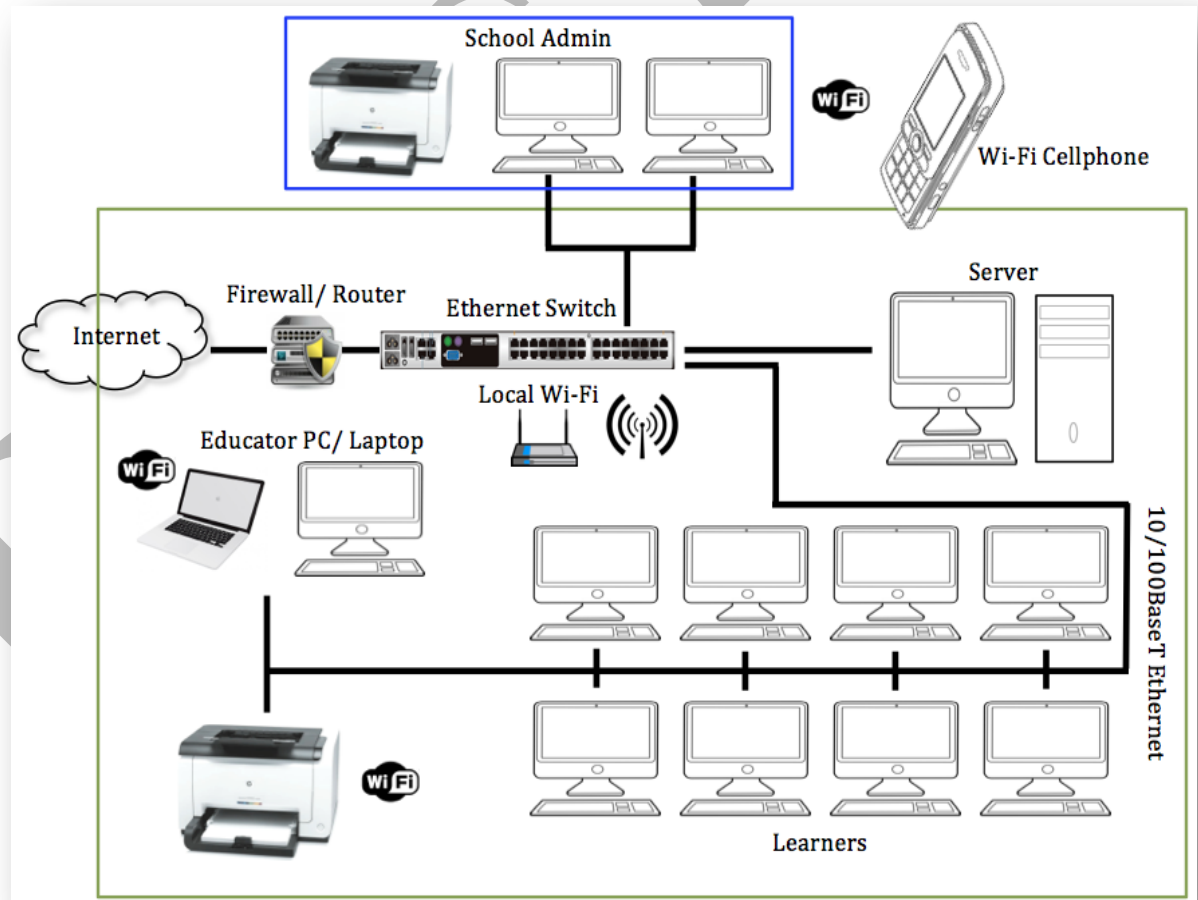
The Ministry of Education recommends the computer system that has “server-client” configurations that may have stand-alone workstations. However due to cost constraints schools may consider “thin-client” configurations, such as server with dumb terminals.

Printers will be mostly monochrome with colour as an option. Colour printers may not be recommended due to their expensive nature to maintain and run. Some peripherals that the school will need:

	Peripherals	Number
1	HP Printer P4515dn	2
2	Data Projectors/Interactive whiteboards (IWB)	1
3	Uninterrupted power supply	45
4	Computer (Stand alone)	45

Some powerful PCs can be used as servers to share resources (e.g. optical drives). The use of uninterrupted power supply (UPS) backup power for servers is recommended.

The diagram opposite shows a recommended school network of computers and peripherals.



Software

The following table depicts the software that is recommended for use in secondary schools.

A typical problem experienced by the Ministry is that schools receive donations of outdated equipment that do not address educational requirements. This document provides specifications for donated equipment to ensure that schools are able to accept and utilise such equipment effectively. computers with less specifications than the specified standard will typically perform below required standards. and expensive to maintain.

Its also important that school managers are mindful that schools are not turned into e-waste dumping grounds.

Teachers' desktops

The following options are for the teacher's desk. These computers should be able to also work as file or print servers so that the teacher can monitor the learners' work.

OPTION ONE

1. 2.4GHz (Celeron or Pentium 4) CPU.
2. At least 2 GB RAM.
3. 500GB or higher hard drive disk (HDD).
4. 15" LCD monitor.
5. 10/100BaseTX Ethernet card or Wi-Fi Card (or Dongle).

OPTION TWO

Desktop PC Bundle, an integrated desktop as shown, (Intel Pentium G2030 3GHz Processor, 4GB RAM, 500GB HDD, Windows 8 or Windows 7)

	Description	Number
1	Operating systems.	
	Windows 7 (Any Version: Basic, Premium or Professional)	1
2	Generic Software	
	Full Version of Office 2007 or higher version	40
	Adobe Dreamweaver CS5 or higher	40
	Adobe Flash CSS5 or higher	40
	Antivirus (On server)	1
3	Compiler	
	Turbo Pascal 7 for Windows (Corporate license)	4
	C++ for Windows (Corporate license)	4
	Microsoft Visual Basic (Later version)	
	Microsoft Visual Studio 10 (Corporate license)	4

• A full version of Microsoft Office should include Word processor, Spreadsheet application, Desktop Publisher

This option of desktops combines both processor and LCD in one. The following gives a summary of the specifications:

1. Screen Size:	23 inches
2. Processor:	Brand Intel
3. Processor Speed:	3 GHz
4. Processor Count:	2
5. RAM Size:	4 GB
6. Computer Memory Type:	DDR3 SDRAM
7. Hard Drive Size:	500 GB HDD OR SSD
8. Graphics Card Description	NVIDIA GeForce GT 710A (1GB dedicated
9. Graphics RAM Type:	DDR3 SDRAM
10. Graphics Card Ram Size:	1 GB



Ideally, a maintenance and support agreement (a 2-3 year on-site warranty) should accompany both bought and donated computers to ensure the availability of the system to the learners.

The following are some of the equipment that may be provided by the ISP (internet Service Provider):

- Firewall/ Router
- Cables
- Wi-Fi routers
- Wi-Fi cards
- Ethernet Switch

Other Hardware

Other hardware or software maybe be considered to be important can be sourced by the school. The following specification may be considered for the schools that may need tablets for their work especially lower primary school:

1. 10.1" Inch Dual Core Multi-Touch Capacitive
2. 1.2 GHz of speed
3. Google Android 4.2 Jellybean Android Operating System (you can download 1000's of apps available on the Google Play store)
4. 1GB MID Tablet PC 8 GB NAND internal storage and up to the 32GB expandable storage

5. HDMI, Wi-Fi & Bluetooth,
6. Flash 10.3 Player,
7. Dual Camera,
8. 3G or 4G capability
9. 1024 x 600 resolution

The illustration below is a typical example of a tablet that runs Google Android 4.2 Jellybean OS or better.



- An example of a recommended tablet operating on Android 4.2 Jellybean with some of the free downloaded applications (Apps).

The school may download appropriate applications (Apps) that can be used on the tablet shown above. The school may also buy a central hard drive disk that can accommodate all the applications that can be used at various grades on the tablet. These applications may also be downloaded directly on to it (tablet) from the Internet through the *Play Store* (see icon for play store on the illustration above). This tablet may also be found useful at all levels of education.

Project Work - School Based Assessment Criteria

The examiner may not recommend the use of any specific programming language; the Centre should choose the language according to the resources available and the ability of the learners to use that particular programming language. Pascal and C++ may be recommended but learners may use any other language to do their projects. However the choice of language must allow them to construct their programs using a structured modular approach.

Centre Number Centre Name:.....

Candidate Number Candidate:.....

DOMAIN	SUB DOMAIN	DETAILS	Minimum Mark	Mark obtained
ANALYSIS	Description of the Problem	Includes the nature of the problem to be solved	2	
	Objectives	To be stated within the context of the project.	2	
	Description of existing solution	Description of the current solution, including data input requirements and output methods.	2	
	Evaluation of existing solution	Evaluation of the current solution highlighting advantages, disadvantages.	2	
	Description of possible solutions	Description of the proposed solution to the problem description after evaluating the existing problem	2	

DOMAIN	SUB DOMAIN	DETAILS	Minimum Mark	Mark obtained
DESIGN	Action plan	Detailed action plan, including Gant Chart	2	
	Systems Flowchart	Full solution represented in system flowchart with correct use of symbols	3	
	Description of method of solution	relevant to the problem relevant to the problem.	3	
	Hardware	Specification of hardware that can do the job OR A list of hardware giving at least two reasons why such hardware is needed in the context of the proposed solution	2	
	Software	A list or description of software and why the software can work on the intended system.	3	
IMPLEMENTATION	Method of solution related to problem identified.	Method of solution related to the problem by suitable means of solving the problem, including 4GL programming and coding, spreadsheet formulas, database programming and tables, site plans of website using Dreamweaver or other website design software.	3	
	Accurate method of solution	Demonstration of accuracy of the methods used and software.	2	
	Programming code	Accurate use of a 4GL language with good comments and annotations.	2	

DOMAIN	SUB DOMAIN	DETAILS	Minimum Mark	Mark obtained
TESTING	Test strategy	Complete test strategy, which must include the data to be tested together with the expected results	1	
	Test results	The system developed should be able to test acceptable (normal), Unacceptable (abnormal) and boundary (extreme) data). Full credit if all can be tested adequately.	6	
DOCUMENTAION	Technical documentation	Overall report (should include: contents page and clear and complete Documentation.)	2	
	User guide	User guide should be clear and complete user guide	2	
System Development and Evaluation.	Evaluation	Reasonable evaluation linked to the computer Objectives testing	1	
	Developments	Meaningful suggestions and improvements for development of the system.	2	
FINAL TOTAL			30%	

Name and signature of examiner:

School Date Stamp: