COMPUTER APPLICATIONS

For Lower Secondary

Normal (Technical) Course

Curriculum Planning & Development Division
Ministry of Education
Singapore

YEAR OF IMPLEMENTATION FROM 2001

1 Introduction

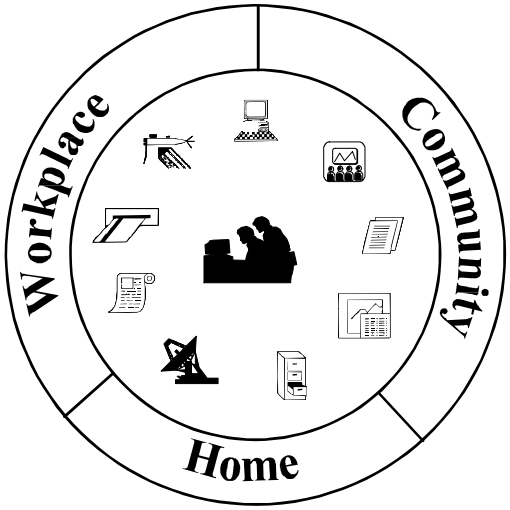
Computer Applications is a skill-based subject designed to meet the needs of the technically oriented pupils. The approach is from an end-user point of view, with emphasis on the utilitarian nature of the computer.

2 Aims

To enable pupils to:

- understand basic computer operation principles
- operate and take care of a computer and its common peripherals
- know how to use the computer to accomplish given tasks using suitable common software packages. In this context, pupils will be able to demonstrate the ability to use the computer for
- word processing
- simple desktop publishing
- graphics
- presentation
- appreciate the role computers play in everyday life.

3 Conceptual Framework



The conceptual framework of the Computer Applications syllabus is based on the understanding that the computer is to be seen as a tool to help make work more productive and improve the quality of life. The computer user actively determines how he wants to use the computer in his workplace, in his home and in the community he lives in. Common applications like the word processing packages act as the interface between the user and his machine. This interface allows the common man to exploit the power of the computer.

The syllabus for Computer Applications does not identify the use of any specific application package. The features to be covered under each application area are generically described, and can be found in most popular software packages.

However, for teaching and learning purposes, it is expected that pupils will be working with one main software application package within the same topic.

4 List of Skills

Spiral Approach

Pupils learn skills best when they are engaged in frequent but intermittent practice of the skill. Hence, the spiral, rather than modular, approach is advocated. For example, in developing the scheme of work for secondary one, the teacher will include word processing activities in the two semesters of work. The same skills will be further reinforced in secondary two together with the introduction of new skills.

Creative and Thinking Skills

Pupils in the past have performed the hands-on operations mechanically without understanding the underlining concepts involved. This has resulted in the pupils not being able to apply the skills learned to other tasks independently.

Through hands-on activities, pupils are encouraged to consciously think about the processes involved to complete the assigned task and given the opportunity to plan and design their own output once they have acquired the basic skills. The focus is on getting pupils to understand the process rather than the operation.

The syllabus suggests the infusion of some applicable thinking skills that can be used to promote a better understanding of the concepts to be taught. Teachers are encouraged to infuse these thinking skills into their lessons.

Some thinking skills, which are applicable to the teaching of concepts and practical skills are listed below.

I <u>Organising</u>
- comparing
- sequencing
- classifying

II <u>Analysing</u>
- identifying attributes and components
- identifying patterns and relationships
- identifying errors

III <u>Remembering</u>
- associating
- categorising

IV <u>Generating</u>
- generating possibilities
- SCAMPER

V <u>Information Gathering</u>
- formulating questions
- prioritising

VI <u>Evaluating</u>
- establishing criteria
- verifying

5 Assessment Guidelines

Assessment of the subject is through a written paper, a practical paper and a coursework paper.

The written paper consists of multiple-choice questions and short-structured questions. The practical paper consists of a word-processing task and is meant to test the pupil's ability to follow instructions to carry out the designated sub-tasks. The coursework paper allows pupils to demonstrate their skills in computer graphics, desktop publishing and multimedia presentation. Pupils need to show their ability to adopt an integrated approach in the use of application software.

Syllabus for Sec 1N(T)

S/N	Topic	Instructional Objectives
1	Computer Basics 1.1 Introduction to computers • Parts of a computer • Input-Process-Output operations • Storage media • Types of computers • Basic computer terminology 1.2 Basic computer operations • Formatting floppy disks • Care of computer systems, floppy disks, CD-ROMs and printers • Working under a graphical user interface (GUI) environment	Pupils will be able to: • recognise that the computer is a general-purpose machine that operates under different programs for different purposes • name the main parts of a microcomputer system and identify their attributes • state the three basic operations of a computer system • identify the different parts of a computer that are used for the input, process and output of information • recognise that meaningful information can be output only after the computer has processed the input data • list the different media used to store data and programs such as floppy disks, hard disks or CD-ROMs • state that the unit of information stored in these media is the byte which represents a number, letter or symbol • recognise the capacity of a storage medium as specified in kilobytes, megabytes or gigabytes and the relationship between these measures • tell the differences between a microcomputer and a mainframe in terms of size and uses • use basic computer terminology • format a floppy disk • use the floppy disk as a storage medium • demonstrate an awareness that storage media and storage devices must be taken care of to prevent loss of data • recognise that icons are graphics that represent programs or documents • interact with icons and menus in a GUI environment • show an awareness that data and programs are saved in folders

S/N	Topic	Instructional Objectives
	• Making backups	• retrieve, save and print files • understand the need to make backups for possible recovery in case the originals are damaged • state ways in which data can be lost • list measures taken to prevent loss of data • make a backup of a floppy disk
2	Word Processing 2.1 Creating and editing a document • Text input, typeover, insertion and deletion • Undo and Redo • Manipulating blocks of text • Using spelling checker 2.2 Formatting a document • Character formatting • Paragraph formatting • Page formatting 2.3 Printing a document • Print preview	Pupils will be able to: • create a new document • recognise that word wrap is a feature which causes text input to flow automatically to the next line • use the Tab key to indent the first line of a paragraph • use the Enter key to end a paragraph • realise that insertion or deletion of text causes an automatic re-adjustment of text in a paragraph • use the undo command to reverse the effect of the last action • use the redo command to reverse the action of undo • delete, copy and move blocks of text within a document • be aware that when text is cut or copied, it is kept in the clipboard which is a temporary storage area in the memory • check the spelling of words in a document against a built-in dictionary • list the limitations of the spelling checker • change fonts (typeface, style and size) to highlight text • perform the following text alignment: centralised, left aligned, right aligned and full justification • set line spacing • use the page setup command to set margins, paper size and page orientation

S/N	Topic	Instructional Objectives
		• use the print preview command
3	Simple Desktop Publishing 3.1 Basic Desktop Publishing 3.2 Creating a publication using pre-designed layout • Entering text and importing text files • Adding graphics 3.3 Elements of simple layout • Page orientation: landscape, portrait • Column guides and ruler guides • Fonts 3.4 Creating a simple layout	Pupils will be able to: • state that desktop publishing refers to the typesetting and layout of a publication using a desktop computer • state that a publication is made up of two types of objects, namely text and graphics • compare the different features of DTP and WP software • recognise that text and graphics are placed in frames • recognise that the layout of a publication can be edited • enter text directly into a publication • import text from word processing documents into a publication • import graphics into a publication • create cards, posters and pamphlets • use the two types of page orientations: namely portrait and landscape • use column and ruler guides to position text and graphics frames when designing layout • use the snap-to-guides feature to align frames to the guides • identify the three elements of fonts, namely typeface, style and point size • distinguish between Serif, San Serif and Script typefaces • create covers for reports and projects using simple layout • create frames for text and graphics • re-size text and graphics frames • move text and graphics frames
4	Computer Graphics 4.1 Vector Graphics • Creating graphics • Editing graphics	Pupils will be able to: • create graphics using basic graphic elements such as lines, curves, sectors, polygons, circles, ovals, squares and rectangles • manipulate graphics by using the following features:

S/N	Topic	Instructional Objectives
	• Use of colours and fonts • Use of clip art or pre-designed graphics	♦ copy and paste ♦ duplicate ♦ move ♦ resize ♦ flip (reflection) ♦ skew (shear) ♦ rotate ♦ group ♦ cut-out • select colours for the outlines and fill of objects from the palette • use fonts as part of graphic design • retrieve and edit clip art to compose a picture
5	Multimedia Presentation 5.1 Multimedia Basics • Elements in a multimedia presentation: text, graphics, animation, sound and video 5.2 Creating a multimedia presentation • Using pre-designed layout • Using clip art • Animating text and graphics • Transition of screen 5.3 Flow within the presentation • Showing previous and next screens	Pupils will be able to: • state that a multimedia presentation can be made up of a combination of different media elements, such as text, graphics, animation, sound and video • know that a multimedia presentation can be used as an effective means of communicating ideas • create a presentation by using pre-designed layout • retrieve clip art and incorporate them into a presentation • animate text and graphics in a presentation • use different screen transitions • control the flow of a presentation
6	Computers in Everyday Life 6.1 Computer-controlled household appliances and devices 6.2 Computer-based learning	Pupils will be able to: • be aware that some household appliances and common devices are controlled by embedded microprocessors • identify household appliances and common devices controlled by embedded microprocessors, such as washing machines, refrigerators, microwave ovens, cameras and digital

S/N	Topic	Instructional Objectives
		watches • recognise that computers can aid learning through self-paced interactive lessons with the effective use of multimedia
	6.3 The Internet • A global network	• identify the different types of CBL software, e.g. drill-and-practice, tutorial, simulation and problem-solving
		• recognise that computers in a network can share resources such as documents, databases and software
	• Using search engines to look for information	• realise that computers in different locations in the world are linked together to form a global network, the Internet
	6.4 Entertainment and recreation	• use a search engine to look for information on the Internet • appreciate the various services that are available on the Internet, e.g. on-line news, cyber-shopping and on-line application to educational institutes
		• give examples on how the computer can be used for entertainment and recreational purposes in the form of games, music and digital video

Syllabus for Sec 2N(T)

S/N	Topic	Instructional Objectives
1	Computer Basics 1.1 How a computer works • System software • Application software • Hardware connections 1.2 Working with folders under a graphical user interface (GUI) environment	Pupils will be able to: • be aware that instructions are required to operate a computer and these instructions are contained in computer programs or software • recognise that the operating system is a system software which controls the input-process-output operations taking place in a computer system • understand that application software refers to programs that are designed to perform specific tasks • show that the different parts of a computer system are connected together through their respective ports • organise data and program files using folders • do basic housekeeping tasks like copying, deleting and renaming files
2	Word Processing 2.1 Editing a document • Searching for and replacing specified text • Copying text from another document window • Inserting documents 2.2 Formatting a document • Indentation • Pagination	Pupils will be able to: • use the Search command to locate specified text quickly in a document • use the Search and Replace command to carry out replacement of specified text • copy blocks of text from one document window to another • insert one document into another • recognise that tab stops provide an efficient way of aligning text at specific positions • identify the different types of indentation • set left, right, centre and decimal tab stops • insert page numbers (that are

S/N	Topic	Instructional Objectives
		automatically generated) in a document • add page breaks to organise the text in a document into pages
3	Simple Desktop Publishing 3.1 Elements of effective design 3.2 Creating a multi-column publication • Using column guides • Controlling the flow of text • Cropping graphics 3.3 Use of master page • Adding text, graphics and page numbers	Pupils will be able to: • recognise that the page layout of a publication should be simple and consistent • use appropriate fonts and graphics to improve visual impact • be aware that the appropriate use of headlines and sub-headlines helps to focus readers' attention • recognise that the multi-column layout is used in publications such as newsletters, magazines, brochures, etc. • use column guides to create a multi-column publication • realise that text can flow from one text frame to another • control the flow of text from one text frame to another • crop graphics to hide the unwanted part • demonstrate an awareness that objects placed on the master page will appear on every page in the publication • add text and graphics to the master page • insert page numbers to all pages in a publication via the master page
4	Computer Graphics 4.1 Vector Graphics • Using gradient fill, blend and reshaping tools and special text effects 4.2 Bitmap Graphics • Creating graphics	Pupils will be able to: • create shading effects using the gradient fill tool • transform a simple object into another using the blend tool • reshape vector graphics by manipulating the nodes and control points • convert text objects into graphic objects • understand that a bitmap graphic is composed of individual coloured pixels • create graphics using straight line, curve,

S/N	Topic	Instructional Objectives
	• Editing graphics using editing tools with the help of the zoom tool • Digitising images	polygon, circle, oval, brush, spray and fill tools • recognise that resizing bitmap graphics can result in a loss of quality as compared to vector graphics which can be resized without loss of details • magnify an area of a picture for editing purposes • edit graphics by making changes to the pixels • be aware that a scanner and a digital camera can be used to digitise images
5	Multimedia Presentation 5.1 Storyboarding 5.2 Simple screen design • Use of fonts and colours • Layout of text and graphic objects 5.3 Importing multimedia elements • Importing sound clips • Importing digitised images	Pupils will be able to: • know that a storyboard shows the contents, screen design and the sequence of the presentation • produce a presentation based on a storyboard • use appropriate fonts and colours as part of screen design • recognise that appropriate use of fonts and colours together with the layout of the media elements on the screen is needed to put a message across effectively • incorporate sound clips in a presentation • import digitised images into a presentation
6	Computers in Everyday Life 6.1 Computers in Banking and Retailing • Electronic Fund Transfer (GIRO, NETS)	Pupils will be able to: • recognise that data can be easily stored, organised, retrieved and processed using the computer • understand that computers in different locations are linked together and

S/N	Topic	Instructional Objectives
	• Automated Teller Machines (ATM) • Magnetic Card and Smart Card • Point-of-Sale	centrally controlled to enable electronic fund transfer • give examples of electronic fund transfer • identify situations where computers are used in banking, e.g. the use of ATM for financial transactions • recognise that PIN (Personal Identification Number) is commonly used as a security measure to initiate a transaction using a magnetic card • be aware that there is a trend towards cashless electronic transactions in banking and retailing • state some uses of computers in the supermarket • state some benefits of using computers in the supermarket • realise that bar codes are used to identify products in the supermarket