



Republic of Namibia

MINISTRY OF EDUCATION, ARTS AND CULTURE

JUNIOR SECONDARY PHASE

COMPUTER STUDIES SYLLABUS

GRADES 8 & 9

For implementation:

**Grade 8 in 2017
and
Grade 9 in 2018**

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Computer Studies Syllabus Grades 8 & 9

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1. Introduction

This syllabus describes the intended learning and assessment for Computer Studies in the Junior Secondary phase. As a subject, Computer Studies is within the *technological* area of learning in the curriculum, but has thematic links to other subjects across the curriculum.

Learning about technology includes applying knowledge of how to do work more efficiently and effectively using tools, materials and processes. Technology is a specific way of solving problems through planning, design, realisation and evaluation. Learners develop the necessary knowledge, skills and attitudes to perform tasks using appropriate technology.

2. Rationale

The application of computers has become an integral part of the present-day society, also in Namibia, to the extent that the skill to use a computer is a major requirement for many vocations and contributes to efficiency in many others. The subject Computer Studies is designed to provide vocational orientation and training in this important domain and is in itself a complete course.

The particular features of Computer Studies at this phase are to equip learners with the skills of using communication- and computer technology (hardware and software), and to do basic computer programming.

3. Aims

Computer Studies promotes the following aims in the curriculum:

- prepare the learner to have a basic knowledge of computer technology and to be able to utilise it;
- enable the learner to use computer technology effectively as an aid to his/her studies;
- enable the learner who continues with Computer Studies as a subject to have a sound foundation to build on;
- broaden the horizon and insight of the learner and to make him/her aware of the possibilities and limitations of computer technology;
- give the learner a basic education in the methods of gathering and processing data by the use of modern technology;
- develop the learner's knowledge of correct computer terminology.

4. Inclusive education

Inclusive education is the right of every learner and promotes access to and participation in the full range of educational programmes and services offered by the education system in mainstream schools. It is based on the principle of supporting and celebrating the diversity found among all learners and removing all barriers to learning. The Computer Studies teacher in the Junior Secondary phase should therefore accommodate learners with special educational needs by adapting this syllabus to the needs of the learner through differentiation of teaching methods and material as indicated in the *Curriculum Framework for Inclusive Education: A Supplement to the National Curriculum for Basic Education (2014)*. The adaptation for assessment of learners with special educational needs must be done as prescribed in the *Handbook for Centres (2014)* by the Directorate of National Examinations and Assessment (DNEA). The accommodations prescribed in this handbook are not only for external examinations, but apply to learners from Grades 1 to 12.

Learners who are so severely impaired that they cannot benefit from attending mainstream schools will be provided for according to their needs in learning support units, resource units or resource schools until such time that they can join a mainstream school structure, if possible.

Teachers of Computer Studies should strive to create a welcoming atmosphere that invites all learners to actively partake in all activities. Care should be taken to cater for the diverse needs of all learners, including those with serious disadvantages and disabilities.

This syllabus promotes equality of opportunity for males and females, enabling both sexes to participate equally and fully. Teachers should know and understand how to treat learners equally, and all materials should support gender equity.

5. Links to other subjects and cross-curricular issues

The cross-curricular issues include environmental learning; HIV and AIDS; population education; education for human rights and democracy (EHRD), information and communication technology (ICT) and road safety. These have been introduced to the formal curriculum to be dealt with in each subject and across all phases, because each of the issues deals with particular risks and challenges in our Namibian society.

All of our learners need to:

- understand the nature of these risks and challenges
- know how they will impact on our society and on the quality of life of our people now and in the future
- understand how these risks and challenges can be addressed on a national and global level
- understand how each learner can play a part in addressing these risks and challenges in their own school and local community

The main risks and challenges have been identified as:

- the challenges and risks we face if we do not care for and manage our natural resources
- the challenges and risks caused by HIV and AIDS
- the challenges and risks to health caused by pollution, poor sanitation and waste
- the challenges and risks to democracy and social stability caused by inequity and governance that ignores rights and responsibilities
- the challenges and risks we face if we do not adhere to road safety measures
- the challenges and risks we face from globalisation

This syllabus is exceptionally suited to address all these cross-curricular issues, since the usage of computer hardware and software and the manipulation of data and information are integral areas of the syllabus. Teachers can use their creativity in planning lessons to include these issues, but it is not prescribed in the syllabus.

Examples:

- internet research on any topic suggested by other subject teachers or guided by the cross-curricular issues and presented in a variety of formats
- use of spreadsheet functions to present statistics on these issues
- creating documents (word processing, presentations, desktop publishing (DTP), websites) containing information, graphics, charts, multimedia
- using Scratch to simulate certain aspects of road safety or another issue
- writing algorithms based on statistics gained from research on these issues

Cross-curricular issues	Environmental learning	HIV and AIDS	ICT	EHRD	Population education	Road safety
Grade 8	These topics will be covered incidentally and are not specifically mentioned in the specific objectives in the learning content of Grade 8					
Grade 9	Theme 4: Internet and e-mail Know how to use the internet: search the Internet for cross-curricular issues Theme 5: Social and economic implications of computer usage					

6. Approach to teaching and learning

The approach to teaching and learning is based on a paradigm of learner-centred education (LCE) described in ministerial policy documents and the LCE conceptual framework. This approach ensures optimal quality of learning when the principles are put into practice.

The aim is to develop learning with understanding, and the knowledge, skills and attitudes to contribute to the development of society. The starting point for teaching and learning is the fact that the learner brings to the school a wealth of knowledge and social experience gained continually from the family, the community, and through interaction with the environment. Learning in school must involve, build on, extend and challenge the learner's prior knowledge and experience.

Learners learn best when they are actively involved in the learning process through a high degree of participation, contribution and production. At the same time, each learner is an individual with his/her own needs, pace of learning, experiences and abilities. The teacher must be able to sense the needs of the learners, the nature of the learning to be done, and how to shape learning experiences accordingly. Teaching strategies must therefore be varied but flexible within well-structured sequences of lessons.

The teacher must decide, in relation to the learning objectives and competencies to be achieved, when it is best to convey content directly; when it is best to let learners discover or explore information for themselves; when they need directed learning; when they need reinforcement or enrichment learning; when there is a particular progression of skills or information that needs to be followed; or when the learners can be allowed to find their own way through a topic or area of content.

Work in groups, in pairs, individually, or as a whole class must therefore be organised as appropriate to the task in hand. Co-operative and collaborative learning should be encouraged wherever possible. In such cases, tasks must be designed so that pair- or group work is needed to complete it, otherwise the learners will not see any relevance in carrying out tasks together. As the learners develop personal, social and communication skills, they can gradually be given increasing responsibility to participate in planning and evaluating their work, under the teacher's guidance.

Individual work is recommended for the teaching and learning of skills related to end-user software. Teachers may use their discretion to pair strong learners with weak learners. Programming is a suitable topic for group work, provided that the teacher ensures that every learner masters all concepts.

For this subject, it is imperative to have a well-equipped computer laboratory with Internet access and enough work stations for all learners. Themes 3, 4, 5 and 6 will comprise of 95% practical activity (on the computer).

It is further strongly recommended that the computer laboratory should have a digital projector and white screen to especially assist in the teaching of end-user software.

For the application software themes, it is recommended to use Microsoft Office 2010 or later **or** Open Office (latest version).

Local content should dominate in the development and usage of teaching and learning materials. Material from other sources should be adapted to suit the Namibian context and the learners' field of reference and level of understanding. Critical thinking should be encouraged, while at the same time the teacher should create a classroom where learners are allowed to make mistakes and learn from them.

7. End-of-phase competencies

On entry to the Junior Secondary phase, all learners are expected to be able to read, write, calculate and communicate in English and must have above average skills in Mathematics.

A few learners might not be able to manage the minimum number of specific objectives and must receive learning support through adapted teaching approaches, adapted materials, and assistance from peers. A small number of learners have special educational needs to a degree which requires greater individual attention, resources or assessment. Others will have impairments which do not necessarily limit cognitive and affective learning and development, e.g. the visually impaired, hearing impaired and physically challenged.

On completion of the Junior Secondary phase of education in Computer Studies, learners are expected to be able to

- demonstrate an understanding of computers in general
- identify and describe hardware as input- or output devices
- classify hardware and software
- describe the functions of operating systems
- perform various operating system tasks
- create, edit, format and print documents using a word processor
- produce publications using desktop publishing (DTP)
- create, edit, format and print documents using a spreadsheet
- identify and describe the hardware, media and transmission modes used for communication
- describe and evaluate various network categories
- utilise the Internet and e-mail for research and communication purposes
- identify the requirements for Internet connectivity
- reflect critically on their responsible usage of computers and its implication in society
- identify and combat threats to data security
- experience programming concepts by using Scratch to produce products based on programming principles
- design, write and interpret algorithms

8. Summary of the learning content

Theme	Grade 8	Grade 9
Introduction to computers	<ul style="list-style-type: none"> - definition - parts and types - representation of data - development of computers - safety issues - skills 	
Computer systems	<ul style="list-style-type: none"> - elements - CPU - devices (input and output) - storage devices - cabling and ports - software 	- ethical issues
Operating systems	<ul style="list-style-type: none"> - definition - functions - types - management skills 	
Word processor	<ul style="list-style-type: none"> - definition - purpose - skills 	
Desktop publishing	<ul style="list-style-type: none"> - definition - purpose - design and create publications 	
Spreadsheet		<ul style="list-style-type: none"> - definition - purpose - skills
Communication and networking		<ul style="list-style-type: none"> - network terminology - network elements - network types - network topologies
Internet and e-mail		<ul style="list-style-type: none"> - definitions - requirements - skills - ethical issues - website design
Social and economic implications of computer usage		<ul style="list-style-type: none"> - social and economic impacts - viruses - security
Programming	- Scratch	- algorithms

9. Learning content

9.1 Introduction to learning content

1. The learning content outlined below is designed to provide guidance to teachers as to what will be assessed in the overall evaluation of learners. It is not meant to limit, in any way, the teaching programme of any particular school.
2. **Themes** refer to those components of the subject which learners are required to study/master.
The **general objectives** are derived from the topic/skill and are the general knowledge, understanding and demonstration of skills on which learners will be assessed.
The **specific objectives** are the detailed and specified content of the syllabus, which learners need to master to achieve the general objectives, and on which they will be assessed. For skills-based subjects, specific objectives indicate what learners should be able to do at the end of the year.
3. Themes 3 to 6 should be done on computers, and the teacher should have enough practical exercises ready to not only cater for the progression of the theme, but also to cater for learners with varied abilities. Theme 10 should be done with many practical examples, so good planning is imperative.

9.2 Learning content

9.2.1 Grade 8 Learning Content

THEME 1 INTRODUCTION TO COMPUTERS

GENERAL OBJECTIVES <i>Learners will:</i>	GRADE 8 SPECIFIC OBJECTIVES <i>Learners should be able to:</i>
<ul style="list-style-type: none">• understand the functions and components of computers• have a clear overview of the development of computing devices• understand that there is a variety of computers for a variety of purposes• understand the correct setup of a computer laboratory • understand the basics of operating a computer	<ul style="list-style-type: none">• give a definition of a computer• state the different parts of a computer• explain how data is represented in computing (binary digits)• explain how computers have developed • classify the various types of computers according to:<ul style="list-style-type: none">- physical size- functionality- purpose• define a computer laboratory• state the safety precautions and practices in a computer laboratory regarding<ul style="list-style-type: none">- behaviour- handling of materials and equipment- fire- cabling- stable power supply- burglar proofing- ventilation- lab layout- dust/damp control- lighting- standard furniture• demonstrate the following basic skills in the use of a computer:<ul style="list-style-type: none">- start, restart, shut down, boot- keyboard layout• demonstrate practical keyboard and mouse skills

THEME 2 COMPUTER SYSTEMS

GENERAL OBJECTIVES <i>Learners will:</i>	GRADE 8 SPECIFIC OBJECTIVES <i>Learners should be able to:</i>
<ul style="list-style-type: none"> • know the components that comprise a computer system • know the hardware components of a computer system 	<ul style="list-style-type: none"> • describe a computer system • explain the functional organisation of the elements of a computer system in terms of <ul style="list-style-type: none"> - hardware - software • list and describe the following input devices: <ul style="list-style-type: none"> - keying devices - pointing devices - scanning devices - speech recognition devices - other digital input devices, e.g. digitisers (pens, tablets), cameras, sensors • describe the central processing unit <ul style="list-style-type: none"> - control unit - arithmetic and logic unit (ALU) - memory - processors (types, clock speeds) • list and describe computer storage <ul style="list-style-type: none"> - primary - secondary/auxiliary (magnetic/optical/solid state/cloud-based) - virtual • describe properties of storage media <ul style="list-style-type: none"> - primary/secondary - fixed/removable - volatile/non-volatile - internal/external - temporary/permanent

THEME 2 COMPUTER SYSTEMS (continued)

GENERAL OBJECTIVES <i>Learners will:</i>	GRADE 8 SPECIFIC OBJECTIVES <i>Learners should be able to:</i>
<ul style="list-style-type: none">• know the hardware components of a computer system (continued)	<ul style="list-style-type: none">• list and describe output devices<ul style="list-style-type: none">- soft copy devices (monitors/screens, audio output, projecting devices, light emitting diodes)- hard copy devices (printers, plotters)• describe devices that are both input and output<ul style="list-style-type: none">- interactive devices (e.g. touch screens)- fax machine- modem• distinguish between different cables and ports<ul style="list-style-type: none">- power cable/port- parallel cable/port- serial cable/port- USB port- PS/2 ports- Ethernet port- infrared- media ports (card slots, high-definition multimedia interface (HDMI))- virtual ports, e.g. Bluetooth• describe how different devices are connected to the system

THEME 2 COMPUTER SYSTEMS (continued)

GENERAL OBJECTIVES <i>Learners will:</i>	GRADE 8 SPECIFIC OBJECTIVES <i>Learners should be able to:</i>
<ul style="list-style-type: none">• be familiar with criteria to select computer systems (continued)	<ul style="list-style-type: none">• evaluate computer system specifications in terms of software considerations<ul style="list-style-type: none">- authenticity- user needs- user friendliness- system requirements- cost- compatibility- portability- documentation- other software considerations

THEME 3 OPERATING SYSTEMS

GENERAL OBJECTIVES <i>Learners will:</i>	GRADE 8 SPECIFIC OBJECTIVES <i>Learners should be able to:</i>
<ul style="list-style-type: none">• know about operating systems, their functions and types of operating systems	<ul style="list-style-type: none">• define an operating system• name the functions of an operating system<ul style="list-style-type: none">- resource control- job scheduling- input/output handling- memory management- error and interrupt handling- disk management (formatting, partitioning, defragmentation, diagnostics, compression, back up)• identify types of operating systems according to number of users<ul style="list-style-type: none">- single user- multi user (multi access, multi-processing, time sharing)• identify types of operating systems according to number of tasks<ul style="list-style-type: none">- single tasking- multi-tasking• identify types of operating systems according to type of tasks<ul style="list-style-type: none">- batch processing- real-time processing• identify types of operating systems according to interface<ul style="list-style-type: none">- command line- graphical user interface (GUI)

THEME 3 OPERATING SYSTEMS (continued)

GENERAL OBJECTIVES <i>Learners will:</i>	GRADE 8 SPECIFIC OBJECTIVES <i>Learners should be able to:</i>
<ul style="list-style-type: none">• understand the use of tools provided by the operating system to organise and manage the computer	<ul style="list-style-type: none">• configure an operating system by changing default settings:<ul style="list-style-type: none">- language (English UK)- currency (Namibian dollar)- date/time format (Windhoek)• describe how information is organised by the operating system<ul style="list-style-type: none">- files and their functions- folders/directories and their functions- storage media• perform the following functions with files and folders:<ul style="list-style-type: none">- create- rename- delete- move- copy- sort- access- drag- find/search- create and delete shortcuts• install and uninstall software

THEME 4 WORD PROCESSORS

NB: For this theme it is recommended to use Microsoft Office 2010 or later or Open Office (latest version)

GENERAL OBJECTIVES <i>Learners will:</i>	GRADE 8 SPECIFIC OBJECTIVES <i>Learners should be able to:</i>
<ul style="list-style-type: none">• know about word processors, their characteristics and purpose • understand the basic working of a word processor in creating, editing, proof reading and formatting documents	<ul style="list-style-type: none">• define a word processor• describe the characteristics of a word processor• state the purpose of word processing, (e.g. letters)• open a word processing application• change the defaults<ul style="list-style-type: none">- language (English UK)- page layout (cm)• describe the screen layout and effectively use the elements thereof• create a document using the following commands:<ul style="list-style-type: none">- save- close the document- exit the application- retrieve the document• edit a document using the following function:<ul style="list-style-type: none">- select- move- copy- delete- insert and overwrite- find and replace• proof read a document by using the following proof reading tools:<ul style="list-style-type: none">- spell and grammar check- thesaurus- auto-correct- undo and redo

THEME 4 WORD PROCESSORS (continued)

GENERAL OBJECTIVES <i>Learners will:</i>	GRADE 8 SPECIFIC OBJECTIVES <i>Learners should be able to:</i>
<ul style="list-style-type: none">• understand the basic working of a word processor in creating, editing, proof reading and formatting documents (continued)	<ul style="list-style-type: none">• perform text formatting using the commands:<ul style="list-style-type: none">- bold- italics- underline- fonts- drop caps- change case- superscript/subscript- text alignment- format painter• perform paragraph formatting regarding:<ul style="list-style-type: none">- alignment- indenting- spacing- section breaks- bullets and numbering• perform page formatting in terms of layout<ul style="list-style-type: none">- columns- headers/footers (date/time, page number)• perform page formatting in terms of setup<ul style="list-style-type: none">- margins- orientation- paper size- tabs

THEME 4 WORD PROCESSORS (continued)

GENERAL OBJECTIVES <i>Learners will:</i>	GRADE 8 SPECIFIC OBJECTIVES <i>Learners should be able to:</i>
<ul style="list-style-type: none">• know how to print a document • know how to insert and edit graphics using a word processor • understand other features of the word processor application	<ul style="list-style-type: none">• set up a printer• print preview a document• use the following options for printing:<ul style="list-style-type: none">- select a printer- orientation- pages- copies- other options• insert different types of graphics:<ul style="list-style-type: none">- drawing- picture- chart• use various methods to add graphics:<ul style="list-style-type: none">- use clip art- import- scan- draw (shapes, SmartArt, WordArt)• edit graphical objects using the following commands:<ul style="list-style-type: none">- update- resize- rotate- enhance• use the following features of the word processor application:<ul style="list-style-type: none">- insert hyperlinks- insert equations- reference- review- insert symbols- other as needed

THEME 5 DESKTOP PUBLISHING (DTP)

GENERAL OBJECTIVES <i>Learners will:</i>	GRADE 8 SPECIFIC OBJECTIVES <i>Learners should be able to:</i>
<ul style="list-style-type: none">• know the characteristics and purpose of DTP • understand the designing and printing of a publication	<ul style="list-style-type: none">• define desktop publishing• describe the characteristics of DTP• state the purpose of desktop publishing• use various techniques available to design a publication:<ul style="list-style-type: none">- design the layout of the publication- insert graphics- manipulate text and graphics- add borders and other enhancements- design various types of publications (brochure, advertisement, poster, calendar, various cards, business card, letterhead, newsletter, menu, web page, CD-cover, other)• use various features to print the publication:<ul style="list-style-type: none">- paper size- double-sided printing- binding options- other

THEME 6 PROGRAMMING

GENERAL OBJECTIVES <i>Learners will:</i>	GRADE 8 SPECIFIC OBJECTIVES <i>Learners should be able to:</i>
<ul style="list-style-type: none">• understand the need to use logic and sequential order to produce a product	<ul style="list-style-type: none">• apply programming principles using Scratch<ul style="list-style-type: none">- identify elements on the Scratch screen (areas, blocks, tools)- realise the importance of planning a project- select a sprite- select a sprite costume- select a background- add movement- add sound- set conditions and events- use operators effectively- use variables effectively- apply repetitive techniques (loops)- realise the importance of correct instructions and sequential order- modify instructions to influence the end product- apply techniques of testing and debugging- apply modular techniques

9.2.2 Grade 9 Learning Content

THEME 1 COMPUTER SYSTEMS

GENERAL OBJECTIVES <i>Learners will:</i>	GRADE 9 SPECIFIC OBJECTIVES <i>Learners should be able to:</i>
<ul style="list-style-type: none">• understand copyright issues while using computer systems	<ul style="list-style-type: none">• define software copyright• explain the importance of a software copyright act (i.e. Digital Millennium Copyright Act of 1998)• discuss the consequences of a software copyright act in today's society• compare and contrast the following:<ul style="list-style-type: none">- open source software- freeware and shareware- public domain software• discuss the effects of software piracy locally and world wide• develop a strategy to reduce software piracy within the community

THEME 2 SPREADSHEETS

GENERAL OBJECTIVES <i>Learners will:</i>	GRADE 9 SPECIFIC OBJECTIVES <i>Learners should be able to:</i>
<ul style="list-style-type: none"> • know the characteristics and functions of spreadsheets • understand how to use a spreadsheet application • know different cell data types • understand the editing and formatting of a spreadsheet document 	<ul style="list-style-type: none"> • define a spreadsheet • name the characteristics of spreadsheets • state the purpose of spreadsheets (e.g. accounting, forecasting) • open a spreadsheet application • change the defaults to: <ul style="list-style-type: none"> - language (English UK) - page layout (cm) • describe the screen layout and effectively use the elements thereof • create a document and perform the following actions: <ul style="list-style-type: none"> - save - close the document - exit the application - retrieve the document • apply page setup features <ul style="list-style-type: none"> - margins - orientation • use printing features to print a document • distinguish between <ul style="list-style-type: none"> - labels - values - formulae - functions • add, name and rename worksheets • select, move, copy and delete content • insert rows/columns • use the fill command/technique • sort data

THEME 2 SPREADSHEET (continued)

GENERAL OBJECTIVES <i>Learners will:</i>	GRADE 9 SPECIFIC OBJECTIVES <i>Learners should be able to:</i>
<ul style="list-style-type: none"> • understand the editing and formatting of a spreadsheet document (continued) • understand the use of functions and formulae in spreadsheets • know the application of spreadsheets in templates • understand cell referencing 	<ul style="list-style-type: none"> • format cells, a range of cells or a worksheet in terms of <ul style="list-style-type: none"> - currency - numbers - text - date/time - percentage • adjust column width and row height • align text • change font type, size and style • merge and unmerge cells • apply borders • wrap text • apply conditional formatting • use pre-defined functions <ul style="list-style-type: none"> - SUM - AVERAGE - MAX & MIN - COUNT - COUNTA - COUNTIF - SUMIF - simple IF - compound IF • create own formulae • create a template with text and formulae and/or functions, e.g. invoice, order form • apply <ul style="list-style-type: none"> - cell addressing - absolute referencing - relative referencing

THEME 5 SOCIAL AND ECONOMIC IMPLICATIONS OF COMPUTER USAGE (continued)

GENERAL OBJECTIVES <i>Learners will:</i>	GRADE 9 SPECIFIC OBJECTIVES <i>Learners should be able to:</i>
<ul style="list-style-type: none">• understand the need for data security (continued)	<ul style="list-style-type: none">• demonstrate good password principles• explain the following:<ul style="list-style-type: none">- hacking- cracking- piracy- phishing- other computer crimes• propose how one could protect devices and computer systems in a variety of environments against digital threats

THEME 6 PROGRAMMING

GENERAL OBJECTIVES <i>Learners will:</i>	GRADE 9 SPECIFIC OBJECTIVES <i>Learners should be able to:</i>
<ul style="list-style-type: none"> • understand algorithms 	<ul style="list-style-type: none"> • define an algorithm • distinguish between <ul style="list-style-type: none"> - pseudo code - flowchart • define a variable and a constant • initialise variables • write algorithms using variables • use operators: <ul style="list-style-type: none"> - mathematical (+, -, /, *, mod, div) - logical (AND, OR) - comparison (=, <, >, >=, <=, <>) • use program control structures for sequencing: • use program control structures for selection (if statements, case statements) • use program control structures for iteration (looping): <ul style="list-style-type: none"> - for.. do - while.. do - repeat.. until (define a sentinel value, use a sentinel value in an algorithm) • draw trace tables to test algorithms with suitable test data

10. Assessment

A learner-centred curriculum and learner-centred teaching encompass a broad range of knowledge and skills which are relevant to the knowledge-based society. The specific objectives in the syllabus state what understanding and skills a learner must demonstrate as a result of this teaching-learning process, and which objectives will be assessed. However, it is intended that the curriculum should focus on learning, not on assessment and examination. Assessment and examination are only to support learning.

10.1 Continuous assessment

In order to capture the full range and levels of competence, a variety of formal and informal continuous assessment situations is needed to give a complete picture of the learner's progress and achievements in all subjects. Continuous assessment must be clear, simple and manageable, and explicitly anchored in learner-centred principles and practice. Teachers must provide a reliable and valid assessment of the learner's performance in the specific objectives. The information gathered about the learners' progress and achievements should be used to give feedback to the learners about their strong and weak points, i.e. where they are doing well, and why, and where, how and why they need to improve. The parents should be informed regularly about the progress of their children in all subjects, be encouraged to acknowledge achievements, and given suggestions as to how they can support the child's learning activities. The learner's progress and achievements in this subject must be reported to parents in the school report.

10.2 Formative and summative assessment

The two modes of assessment used are formative continuous assessment and summative assessment. Formative continuous assessment is any assessment made during the school year in order to improve learning and to help shape and direct the teaching-learning process.

Assessment has a formative role for learners if and when:

- it is used to motivate them to extend their knowledge and skills, establish sound values, and to promote healthy habits of study
- assessment tasks help learners to solve problems intelligently by using what they have learnt
- the teacher uses the information to improve teaching methods and learning materials

Summative assessment is an assessment made at the end of the school year based on the accumulated total of the progress and achievements of the learner throughout the year in a given subject, together with any end-of-year tests or examinations. The result of summative assessment is a single end-of-year promotion grade.

10.3 Informal and formal methods

The teacher must assess how well each learner is mastering the specific objectives described in the syllabus and from this gain a picture of the all-round progress of the learner. To a large extent, this can be done in an informal way and in their participation in general, through structured observation of each learner's progress in learning and practice situations while they are investigating things, interpreting phenomena and data, applying knowledge, communicating and making value judgements.

When it is necessary to structure assessment more formally, the teacher should as far as possible use situations similar to ordinary learning and practice situations to assess the competency of the learner. Formal written and oral tests can be used to assess only a limited range of specific objectives and therefore should not take up a great deal of time.

Short tests should be limited to part of a lesson and only in exceptional cases use up a whole lesson.

10.4 Evaluation

Information from informal and formal continuous assessment is to be used by the teacher to ascertain where it is necessary to adapt methods and material to the individual progress and needs of each learner. At the end of each main unit of teaching and at the end of each term, the teacher, together with the learners, should evaluate the learning-teaching process in terms of tasks completed, participation, what the learners have learnt, and what can be done to improve the working atmosphere in and achievements of the class.

10.5 Criterion-referenced grades

When grades are awarded in continuous assessment, it is essential that they reflect the learner's actual level of achievement in the specific objectives, and are not related to how well other learners are achieving these objectives or to the idea that a fixed percentage of the learners must always be awarded a Grade A, B, C, and so on (norm-referencing). In criterion-referenced assessment, each letter grade must have a descriptor for what the learner must demonstrate in order to be awarded the grade. Grade descriptors must be developed for each subject for each year. It is important that teachers in each department/section work together to have a shared understanding of what the grade descriptors mean, and how to apply them in continuous assessment, so that grades are awarded correctly and consistently across subjects. Only then will the assessment results be reliable.

10.6 Grade descriptors

The learner's summative achievement in the specific objectives will be shown in letter grades A to E, where A is the highest and E the lowest grade for learners achieving minimum competency level. In cases where a learner has not reached the minimum level of competency a U will be awarded. When letter grades are awarded, it is essential that they reflect the learner's actual level of achievement in relation to the specific objectives. The relation between the letter grades and specific objectives is shown in the table below.

Grade	% Range	Grade descriptors
A	80%+	Achieved objectives exceptionally well. The learner is outstanding in all areas of competency.
B	70-79%	Achieved objectives very well. The learner's achievement lies substantially above average requirements and the learner is highly proficient in most areas of competency.
C	60-69%	Achieved objectives well. The learner has mastered the specific objectives and can apply them in unknown situations and contexts.
D	50-59%	Achieved objectives satisfactorily. The learner's achievement corresponds to average requirements. The learner may be in need of learning support in some areas.
E	40-49%	Achieved the minimum number of objectives to be considered competent. The learner may not have achieved all the specific objectives, but the learner's achievement is sufficient to exceed the minimum competency level. The learner is in need of learning support in most areas.
U	0-39%	Ungraded. The learner has not been able to reach a minimum level of competency in the objectives, even with extensive help from the teacher. The learner is seriously in need of learning support.

10.7 Conducting and recording assessment

Continuous assessment should be planned and programmed at the beginning of the year, and kept as simple as possible. Marks given for class activities, practical activities, project work, assignments, homework and short tests may be recorded for continuous assessment.

10.8 Assessment objectives

The assessment objectives for Computer Studies are:

10.8.1 Assessment objective A: Knowledge with understanding

Learners should be able to demonstrate knowledge with understanding about computing, in relation to:

- the range and scope of information processing applications;
- the effects of the use of computers;
- the range of equipment, tools and techniques used to solve problems;
- the functions of the main hardware and software components in information processing systems.

(Questions assessing these objectives will often begin with words such as: name, identify, define, state).

10.8.2 Assessment objective B: Problem Solving and Realisation

Learners should be able to:

- identify problems within the field of information processing;
- analyse problems by considering relevant functional, practical, human and economic factors;
- draw up specifications for the computer-based solutions of problems;
- select from a range of resources those which are most suitable for solving problems;
- develop solutions using appropriate methodologies;
- implement solutions using equipment, tools and techniques sensibly;
- test, evaluate and refine solutions systematically;
- document problem solutions.

(Questions assessing these objectives will often begin with: explain, compare, write an algorithm).

10.8.3 Assessment objective C: Application

Learners should be able to:

- organise, interpret and present data to provide useful information;
- recognise and present information in a variety of forms;
- communicate information in appropriate ways;
- describe, using appropriate methods, ideas related to information processing and problem solving.

(Questions assessing this objective will often begin with: name..., explain... / describe the use of).

10.9 Continuous assessment: detailed guidelines

A specified number of continuous assessment activities per term should be selected, graded and recorded. Not more than two assessments per term are to be topic tests. These continuous assessments must be carefully planned and marked according to a marking scheme, marking criteria or memorandum. The criteria used to assess activities other than tests should be given to the learner before the assessment activity. Evidence of the work produced by good, average and low-achieving learners, as well as the written assignment and marking scheme, has to be kept at school until the end of the next year. Teachers can choose to grade and/or record more than the required continuous assessments if it is necessary for formative purposes. An end-of-year summative grade will be based only on the assessment tasks described in the syllabus. Not more than 40% of the continuous assessment may be based on tests, which include topic tests and end-of-term tests.

Types of continuous assessment tasks

Continuous assessment should be planned and programmed at the beginning of the year, and kept as simple as possible. Marks given for class and homework activities may be recorded for continuous assessment.

In Computer Studies in the Junior Secondary phase the continuous assessment tasks are as follows:

Topic tests: Every topic taught should be concluded with a test indicating the mastery of these topics by the learners. All these tests will not necessarily form part of the continuous assessment mark.

Topic tasks: These are recorded, assessed activities that could introduce a topic, be used during the teaching of a topic and/or revision a topic. They may well include assessment involving specific objectives to do with locating information, conducting surveys, analysing information or presenting information. Topic tasks will involve assessments of specific objectives in all assessment objectives; however, not all assessment objectives need to be present in every topic task. The greatest emphasis should be placed on assessment objectives B and C (see section 10.11) to meet the weighting shown in the specification grid on page 37. Typically, a topic task in Computer Studies will cover an aspect of a practical section of the syllabus.

Projects: A project is a longer assignment than a topic task, and gives learners an opportunity to complete an investigation into one of the themes outlined in the syllabus. This type of investigation will enable the teacher and learner to pursue a theme in greater depth and in a more creative way than possible with short topic tasks. Examples of marking grids are included (pages 38 – 41).

End-of-term tests: This will be a more comprehensive test of the term's work, but certainly not as comprehensive as an examination. No homework should be assigned during the time of writing the end-of-term tests.

Summary of continuous assessment tasks

Continuous assessment Grade 8						
Components	Term 1		Term 2		Term 3	
	Number & marks	Total	Number & marks	Total	Number & marks	Total
Projects			1 x 40*	40	1 x 40*	40
Topic tasks	2 x 25	50	2 x 25	50	2 x 25	50
Topic tests	1 x 20	20	1 x 20	20	1x 20	20
End-of-term tests	1 x 50	50	1 x 50	50		
Term marks		120		160		110
Weighted term marks (report marks)		(120 ÷ 1.2) 100		(160 ÷ 1.6) 100		

* Grade 8 projects: Term 2: Word processing/DTP Term 3: Scratch

Continuous assessment Grade 9				
Components	Term 1		Term 2	
	Number & marks	Total	Number & marks	Total
Projects	1 x 40*	40	1 x 40*	40
Topic tasks	2 x 30	60	2 x 30	60
Topic tests	1 x 20	20	1 x 20	20
End-of-term tests	1 x 50	50	1 x 50	50
Term marks		170		170
Weighted term marks (report marks)		(170 ÷ 1.7) 100		(170 ÷ 1.7) 100

* Grade 9 projects: Term 1: Spreadsheet Term 2: Programming

The continuous assessment (CA) marks for one term (trimester) is converted to a mark out of 100 (weighted mark). Only this mark should be used for the report at the end of Term 1 and Term 2. Learners should not write an examination at the end of the first two trimesters, but only an end-of-term test which is part of the CA and part of the weighted term mark.

10.10 End-of-year examinations: detailed guidelines

In Grade 8 there will be an internal end-of-year examination and at the end of Grade 9 a semi-external examination. The Grade 9 papers will be set by DNEA and marked regionally. The purpose of this examination is to focus on how well learners can demonstrate their thinking, communication, and problem-solving skills related to the areas of the syllabus which are most essential for continuing in the next grade. Preparing for and conducting these examinations should not take up more than two weeks altogether right at the end of the year.

The description of the various papers for the written examination is as follows:

Written examination Grade 8		
Description of questions	Duration	Marks
Paper 1		
Section A: Multiple choice (30 questions of 1 mark each) Differentiated questions on all topics	1h 30 min	30
Section B: Question 1: 5 Definitions (2 marks each) covering the syllabus Further questions: A variety of compulsory questions of variable mark value, which require answers of varying length and difficulty. The questions will be based on all sections of the syllabus in line with the assessment objectives. At least one question will assess learners on Scratch programming (10 marks).		10
TOTAL		90
		130

Written examination Grade 9		
Description of questions	Duration	Marks
Paper 1		
Section A: Multiple choice (30 questions of 1 mark each) Differentiated questions on all topics	1h 30 min	30
Section B: Question 1: 5 Definitions (2 marks each) covering the syllabus Further questions: A variety of compulsory questions of variable mark value, which require answers of varying length and difficulty. The questions will be based on all sections of the syllabus in line with the assessment objectives. At least one question will assess learners on trace tables and algorithms (20 marks).		10
TOTAL		90
		130

10.11 Promotion marks

For Computer Studies in Grades 8 & 9 Continuous Assessment contributes 35% to the promotion mark and the end-of-year examination contributes 65%. The weighting of each assessment component is as follows:

Component	Description	Marks	Weighting
Written examination	Section A	30	15%
	Section B	(100):	5%
	Definitions	10	
	Hardware and software Operating system	10	5%
	General application software and computer skills	Grade 8: 45 Grade 9: 35	22.5% 17.5%
	Structured questions relating to computer usage and its effects on society	25	12.5%
	Scratch programming, algorithm segments, trace table and problem solving	Grade 8: 10 Grade 9: 20	5% 10%
Continuous assessment	Projects	Grade 8: 14 Grade 9: 16	7% 8%
	Topic tasks	Grade 8: 27 Grade 9: 25	13.5% 12.5%
	Topic tests	Grade 8: 11 Grade 9: 8	5.5% 4%
	End-of-term test	Grade 8: 18 Grade 9: 21	9% 10.5%
	Total marks	200	100%

The promotion marks are calculated as follows:

Promotion mark for Grade 8				
	Term 1	Term 2	Term 3	Total
Term mark	120	160	110	390
CA mark	390÷39×7			70
End-of-year examination				130
Promotion mark	200÷2			100

Promotion mark for Grade 9			
	Term 1	Term 2	Total
Term mark	170	170	340
CA mark	340÷34×7		70
End-of-year examination			130
Promotion mark	200÷2		100

10.12 Specification grid

The specification grid below indicates the weighting allocated to each objective for both Continuous Assessment and for the written examination.

	Continuous assessment (%)		Examination (%)		Total (%)	
	GR 8	GR 9	GR 8	GR 9	GR 8	GR 9
Objective A Knowledge with understanding	10	5	40	30	50	35
Objective B Problem solving and realisation	10	10	15	20	25	30
Objective C Application	15	20	10	15	25	35
Weighting	35%	35%	65%	65%	100%	100%

10.13 Assessment rubrics/criteria

10.13.1 Assessment rubric/criteria for word project in Grade 8

e.g. Create a magazine with articles and advertisements (40 marks)

Criteria/marks	1	2	3
Fonts	Different fonts were used	Different fonts and font sizes were used	The fonts and font sizes were suitably applied and creatively used
Graphics	Only a few graphics or not suitable for the purpose, or not in a variety of formats or not suitable layout options	A variety of suitable graphics; variety of formats and suitable layout options selected	All of the previous plus evidence of grouping and creativity
Alignment	Done as prescribed		
Borders and Frames	Only one kind used	Creative use of a variety of borders and frames	
Text boxes/other shapes	Present, but no variety, incorrect formatting	All text boxes/shapes are correctly sized to fit text. Creatively placed	
Word Art	Present	Creatively and sparsely used and placed	
Bullets	Correctly used	More than one level was used for either bullets or numbering	
Numbering	Correctly used		
Page numbers	Inserted as prescribed		
Headers and Footers	Present, but not done as prescribed	Both Headers and Footers inserted as prescribed	
Formatting	Only basic formatting techniques (B, U, I)	More advanced techniques apart from B, U, I, but still limited	A variety of advanced formatting techniques. Evidence of Format Painter being used; formatting suitable for the purpose
Columns	Columns were created	Columns were creatively manipulated	
Margins	As prescribed	A variety of at least two margin settings used with section breaks	
Watermark	As prescribed		
Orientation	Variety as prescribed		
Paragraph	Use of line spacing as prescribed	Use of line spacing and hanging indents as prescribed	The previous plus correct use of indentation
Table	Basic table with content	Table with headings and content	Creative formatting and placement
Special characters	Used correctly	Special characters AND equations used	
Hyperlinks	1 or 2 fully functional hyperlinks inserted		
Word count	Number of words indicated		
The final product	Acceptable product	Exceptional product	

Bonus marks for evidence of advanced skills used, e.g. a properly functional table of contents.

10.13.2 Assessment rubric/criteria for Scratch project in Grade 8 (40 marks)

Criteria/marks		1	2	3	4
Design	Remixing	The cat was used as a sprite and the background was white	The sprite or the background was changed	Both the sprite and the background were remixed	Own sprite and background were created
	Interactive project	There is no way to interact with the project	Not clear how to interact with the project	Interactive project with clear instructions	Many interactions, easy to use without instructions
	Events	Disorganised sequence of events	Some logic in the sequence of events	The sequence of events follow a logical pattern	Many logical sequences of events
	Parallelism	Only one thing going on at a time	Attempt at making two or more things happen at the same time	Two things happening at the same time	More than two things happening at the same time
Programming	Blocks	Blocks from only category were used	Blocks from two different categories were used	Blocks from three different categories were used	Blocks from four or more different categories were used
	Loops	No repeating actions	Only duplication was used to create repeating actions	Only loops were used to create repeating actions	Both loops and duplication were used to create repeating actions
	Debugging	Done with help from the teacher	Done with some help	Project completely debugged with help	Completely debugged without assistance
Process	Testing	Program not tested	Tested when reminded	Tested program regularly	Tested scripts a few blocks at a time as the project was created
	Time management	Deadlines could not be met	Some deadlines were met	Project time was used well and all deadlines were met	All planning and the Scratch project were done in time and extra time was used to improve the project
	Planning and reflection	Notes about the project are incomplete	Basic planning evident from notes	Thoughts are expressed clearly	Thoughts are expressed clearly and there is evidence of different solutions. Ideas for improvement are written down

10.13.3 Assessment rubric/criteria for spreadsheet project in Grade 9

e.g. the teacher gives a variety of problems involving the collection of calculable data that must be presented in a spreadsheet. (40 marks)

Criteria/marks	1	2	3
Heading	Clear	Clear, merged and centred and good use of font style and -size	
Labels	Some missing, not appropriately named	Appropriately named, good use of font style and -size	
Row height/column width	Adjustments made		
Data	Present, good variety	Some formatting done	Data types correctly formatted, e.g. date, time, percentage, currency, decimals
Formulae – basic (SUM, AVERAGE, MIN, MAX, COUNT)	Only 1 or 2 basic formulae used	At least 3 present, but no ranges used	At least 3 with proper use of ranges
Formulae – advanced (IF, COUNTIF, SUMIF, COUNTA, absolute reference)	Simple IF (only 1 possibility) OR Formula(e) using absolute referencing	Simple IF (only 1 possibility) AND Formula(e) using absolute referencing	Compound IF (at least 3 possibilities)
Sorting	Simple sorting skills shown (only 1 column)	Advanced sorting skills shown (at least 2 columns)	
Filtering	1 set of data filtering done on a separate sheet correctly named	At least 2 sets of data filtering done on separate sheets correctly named	
Formatting	Limited basic formatting skills shown	A variety of basic formatting skills shown	Advanced formatting skills shown (e.g. conditional formatting, use of shading)
Spreadsheet functions	Paste Link OR hyperlink OR Freeze panes correctly used	Two of the previous 3 correctly used	All 3 correctly used
Alignment	Basic alignment skills displayed (left, right, centre)	Good use of alignment techniques (direction, left/right/centre, text wrapping)	
Borders	Present (one style)	A variety of borders	
Page setup	Orientation OR margins changed	Orientation AND margins correctly applied	
Graphic	Logo or other acceptable graphic, correctly placed and sized		
Charts (at least 2 using different data sets and criteria) NB: Mark twice – each chart separately	Done, but incorrectly	Done on separate sheets (correctly named), but with errors or missing some elements (heading, correct ranges selected, labelled correctly, acceptable intervals, legend)	Correctly done on separate (correctly named) sheets with all elements present
Data validation	Done, but no (or incorrect) error message	Done with correct error message	
Overall appearance	A professional-looking end product		

10.13.4 Assessment rubric/criteria for programming project in Grade 9

e.g. the teacher gives a variety of problems. Each learner uses one and develops an algorithm in pseudocode to solve the problem. A list of variables must be provided. Thereafter the learner draws a flowchart, using the same algorithm. A trace table must accompany these. (40 marks)

Criteria/marks	1	2	3
PSEUDOCODE			
Variables	Listed, but incomplete	All variables listed	All variables listed, appropriate names and appropriate explanations
Initialisation	Done, but too many or too few	All necessary initialisations done	
Input	Done, but wrong placement/syntax	Correct syntax and placement	
Error messages	Present, but incorrectly used	Provision was made for wrong inputs	
Conditional statements (if, case)	Present, but incorrect	Correct syntax and placement	
Iterations (Loops)	Attempt at using a loop, but incorrect loop	Correct loop, but with errors	Correct loop, correct syntax and placement
Processing (calculations)	Present, but incorrect use or placement	Correctly placed, but with errors	Correct placement and syntax
Output	Correct syntax and placement	Correct use of labels	
Indentation	Used, but not through-out	Good use of indentation through-out	
Comments	Good use of comments		
Success of the algorithm	The algorithm did not solve the problem	The algorithm partially solved the problem	The algorithm completely solved the problem
FLOWCHART			
Shapes	More than 2 shapes wrong	Most shapes correct, but no connectors	All shapes correct, including connectors, begin and end
Logic (sequence)	Errors in the flow (wrong arrows)	The flow is correct Numbering and true/false labels all correct	
TRACE TABLE			
Test data	Insufficient test data	Sufficient normal data	All instances of data input considered, including abnormal data
Variables and decisions	Some missing	All variables, decisions and output listed	
Sequence	More than 3 steps omitted	1 or 2 steps not done	Algorithm tested correctly, all steps done and in correct sequence
Output	Present, but incomplete	Correct output, including correct label(s)	

Annexe 1: Glossary of terms

ADSL	Asymmetric Digital Subscriber Line; a fast way to connect to the Internet
algorithm	a precise set of rules specifying how to solve a given problem
authentication	validating the true and legal origin, e.g. to allow a user access to a system
back up	to make a copy of computer files for storage in another place as a security copy
biometric password	the identification of living individuals by using their physiological and behavioural characteristics
booting	to start the initial processes and load an operating system by either starting up a computer or restarting it
bridge	a device that connects a local area network (LAN) to another local area network that uses the same protocol
client	any computer that is hooked up to a computer network
command line interface	a user interface in which you type commands instead of choosing them from a menu or selecting an icon
computer	an electronic device for processing data and performing calculations; it follows instructions (programs) to perform sequences of mathematical and logical operations; after which it returns processed information. A computer may also have the ability to store information
constant	in programming, a value or any other piece of data that does not change
data	also called raw material; in computing terms, anything that is entered into the computer. It may be text or numbers. (also see <i>Information</i>)
data encryption	converting data or information into code for security purposes
data privacy	the right of an individual to decide what personal information can be shared with third parties
data protection	safeguarding important information from corruption and/or loss
desktop publishing	the use of computers with graphics capacity to produce printed materials
digitiser	device for converting analogue signals into digital signals
disk defragmentation	to reduce fragmentation of files on a storage device by moving separated parts into a contiguous location

disk partitioning	logical division of a hard disk so that different operating systems can reside on the same hard disk; also to create the appearance of having separate hard drives for file management, multiple users, or other purposes (e.g. back up)
firewall	a security system consisting of a combination of hardware and software that limits the exposure of a computer (or computer network) to attacks from crackers; commonly used on local area networks that are connected to the Internet
firmware	coded instructions that are stored permanently in read-only memory
flow chart	a diagram of the sequence of operations in an algorithm
freeware	software that is provided without charge
FTP	File Transfer Protocol – protocol that allows users to move files between their local system and any system they can reach on the network
gateway	a network node that acts as an entrance to another network; controls traffic between networks
GUI	Graphical user interface – a user interface based on graphics (icons and pictures and menus) instead of text; primarily uses a mouse as an input device for OS-related commands
hacking	obtaining unauthorised access to a computer or network
hardware	the mechanical, magnetic, electronic and electrical components making up a computer system (also see <i>Peripherals</i>)
HDMI	high-definition multimedia interface; a digital audio and video connection interface
hub	a place of convergence where data arrives from one or more directions and is forwarded out in one or more other directions; can include a switch and a router
hyperlink	a hypertext link to another location or file; activated by clicking on a highlighted/coloured/underlined word or icon
ICTs	any communication device or application and the various services and applications associated with them – including radio, television, computer hardware and software and satellite services
information	data that have been processed

internet	a worldwide network of computer networks that use the TCP/IP network protocols to facilitate data transmission and – exchange (TCP/IP: Transmission Control Protocol/Internet Protocol)
ISDN	Integrated Services Digital Network – a set of CCITT/ITU standards for digital transmission over ordinary telephone copper wire as well as over other media (CCITT/ITU: Consultative Committee for International Telephony and Telegraphy/International Telegraph Union)
legend	a brief description accompanying a chart
menu-driven interface	an interface where the user interacts with the computer by selecting various options from a list of choices
modem	(from a combination of MOdulate and DEModulate) an electronic device used to connect computers, historically by means of a telephone line, but also by means of other analogue signals such as light emitting diodes or radio waves
netiquette	Internet etiquette, courtesy and consideration for others while using shared services, social media, mailing lists, etc.
network protocol	rules determining the format and transmission of data within a network or between two networks
network topology	the configuration of a communication network. The four principles of network topology are star, bus, ring, hierarchy
news groups	a collection of messages about a particular topic accessed over the Internet
node	any computer or hardware device that is hooked up to a computer network and which can send/receive data (a server, a printer, a hub are all nodes)
non-volatile	permanent – referring to memory (may be ROM or any other permanent storage)
open source software	software that is developed, tested, or improved through public collaboration and distributed with the idea that it should be shared with others, who may continue the development and improvement
page orientation	the direction in which a page is displayed or printed – portrait (vertical) or landscape (horizontal)
peripheral	electronic equipment connected by cable to a computer (also see <i>Hardware</i>)
protocol	a set of rules governing the exchange or transmission of data between devices, e.g. IP, TCP, HTP, FTP, VOIP
PS/2	Personal System/2 – a round connector/port with six pins/slots that older PCs use for connecting the keyboard and mouse

pseudo code	statements outlining the operation of a computer program, written in something similar to computer language, but in a more understandable format
public domain software	content that is not protected by any copyright law or other restriction and may be freely copied, shared, altered and republished by anyone
router	a device that forwards data packets between networks
search engine	a computer program that retrieves documents or files or data from a database or from a computer network (especially from the Internet)
sensor	any device that receives a signal or stimulus (e.g. heat, pressure, light, motion)
server	a computer that provides client nodes with access to files and shared hardware resources on a computer network
shareware	software that is available free of charge; may be distributed for evaluation; a fee requested for additional features or a manual
software piracy	illegal copying and using software without payment or the permission of the owner
software	computer programs, written as a series of instructions, procedures and rules; stored in memory
Sprite	in Scratch programming, a chosen character that reacts to programmed instructions
switch	a device that channels incoming data from any of multiple input ports to the specific output port that will take the data toward its intended destination
thesaurus	a list of synonyms
trace table	method of testing an algorithm for logical errors – also known as a dry run
trouble shooting	to solve problems – in computing, used in relation to hardware as well as software
URL	Uniform Resource Locator; the address of a web page on the World Wide Web
USB	Universal Serial Bus; a way of attaching peripheral devices to a computer; uses narrow, rectangular ports and connectors
utilities	programs designed for general support of the processes of a computer
validation	testing whether data complies with specified rules

variable	used in programming, a value that is likely to change
verification	in computing, proof that data input is correct
virus	a software program capable of reproducing itself and usually capable of causing great harm to files or other programs on the same computer; a true virus cannot spread to another computer without human assistance
VOIP	(Voice over Internet Protocol) – the hardware and software that enables people to use the Internet as a transmission medium for telephone calls
volatile	referring to memory, non-permanent; data in volatile memory (RAM) is lost if not saved to permanent storage
workstation	a desktop computer that is conventionally considered to be more powerful than a microcomputer
WWW	World Wide Web – a computer network consisting of a collection of Internet sites that offer text, graphics, sound and animation resources using the hypertext transfer protocol; part of the Internet

Annexe 2: Explanation of abbreviations

ADSL	Asymmetric Digital Subscriber Line
ALU	arithmetic and logic unit
CAD	computer-aided design
CAM	computer-aided manufacturing
CD	compact disk
FTP	File Transfer Protocol
GUI	graphical user interface
HDMI	high-definition multimedia interface
ICT	Information and Communication Technology
ISDN	Integrated Services Digital Network
LAN	local area network
MAN	metropolitan area network
mms	multimedia message service
NIC	Network Interface card
PS/2	Personal System/2
RAM	random access memory
ROM	read-only memory
sms	short message service
URL	Uniform Resource Locator
USB	Universal Serial Bus
VOIP	Voice over Internet Protocol
WAN	wide area network
WWW	world wide web

Annexe 3: Assessment record sheet for Grade 8

Assessment record sheet: Computer Studies												Grade 8:			Year:	
School:										Teacher:						
Name of Learner	Term	Topic Task		Topic Test	Project	End-of-term test	Term mark 1	Term mark 2	Term mark 3	Weighted term mark	Total term marks	CA Mark (390 ÷ 39x7)	End-of-year examination	Promotion mark ((70 + 130) ÷ 2)		
		25	25	20	40	50	120	160	110	100	390	70	100	100		
	1															
	2															
	3															
	1															
	2															
	3															
	1															
	2															
	3															
	1															
	2															
	3															

Annexe 4: Assessment record sheet for Grade 9

Assessment record sheet: Computer Studies													Grade 9:		Year:	
School:													Teacher:			
Name of Learner	Term	Topic Task		Topic Test	Project	End-of-term test	Term mark 1	Term mark 2	Weighted term mark	Total term marks	CA Mark (340÷34x7)	Examination mark	Promotion mark ((70 + 130) ÷ 2)			
		30	30	20	40	50	170	170	100	340	70	130	100			
	1															
	2															
	1															
	2															
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	2															
	1															
	2															



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