Information and Communication Technologies

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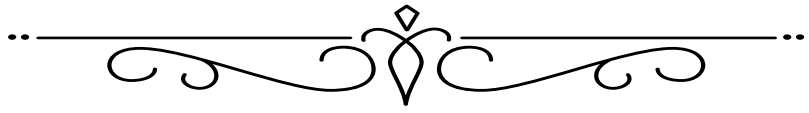

A. Introduction

The learning principles of the Primary School Curriculum

The Primary School Curriculum presents a vision of education, which is expressed in three general aims:

• To enable the child to live a full life as a child, and to realize his or her potential as a unique individual.

• To enable the child to develop as a social being through living and cooperating with others and so contribute to the good of society.

• To prepare the child for further education and lifelong learning.

To support children's ongoing realization of their potential as individuals and as members of society, it is important for the primary school teacher to incorporate a range of teaching and learning resources into his or her teaching methods. Guided by the needs of the individual child, the philosophy and content of the curriculum, and the use of tools and resources that can enhance the child's learning, the teacher can design learning experiences that support the broadly stated aims of the Primary School Curriculum.

Specific aims for ICT use in the primary school include:

• To enable the child to use a range of ICT tools in a relevant curriculum context

• To enable the child to develop and use ICT skills in the attainment of curriculum learning objectives

• To foster the child's confidence in his or her use of ICT, through enjoyable learning experiences

• To develop the child's understanding and practice of the safe use of ICT

• To enable the child to overcome barriers of access to learning resources caused by geographic location, culture, or language

• To enable the child to use ICT to support his or her learning effectively and creatively

• To inform the child's attitudes regarding the role of ICT in society, including the benefits and challenges of ICT use

• To support the development of the child's social skills through cooperative learning and problem-solving.

B. ICT and the principles of learning in the Primary School Curriculum

PRINCIPLE OF LEARNING	TEACHING AND LEARNING STRATEGIES USING ICT
The child's sense of wonder and natural curiosity Children's natural sense of wonder at the complexity of the world is a powerful motivation for their learning.	The child's sense of wonder and natural curiosity may be engaged by using content-free software. For example, programming software and LOGO with their potential for the dynamic representation of real-world phenomena, can enable children to experiment with procedures and outcomes in a controlled context *Additional uses of ICT to support this principle of learning include:* • exploring and investigating using the WWW • collaborating and communicating with children in other schools, and in other countries in real time.
The child as an active agent in his or her learning Learning is an active process of constructing knowledge, rather than simply acquiring knowledge.	ICT tools can promote active learning by enabling the child to find, manage, evaluate and use information retrieved from CD-ROMs and websites. By providing access to a range of information resources, ICT can be used to support the child on a journey of discovery that requires decision-making at numerous junctures in the learning experience. The child can discuss his or her findings, and share them with others using presentation and authoring software. *Additional uses of ICT to support this principle of learning include:* • exploring Web Quests, and Learning quests • using drawing and paint software to create and edit designs and patterns • using digital cameras and digital video on field trips to capture images of events for project work, and for active engagement in the wider environment.
The developmental nature of learning Conceptual development is more of a cyclical than a linear process for the child. The Primary School Curriculum recommends that children receive regular opportunities to revisit concepts, information and skills that have already been acquired.	ICT can support children as it offers opportunities to revise concepts and skills embedded in game-like situations. Content-rich software, that offers tutorials, simulations, and practice problems, can be used effectively for the reinforcement or the revision of concepts

The child's knowledge and experience as a base for learning It is a fundamental principle of the Primary School Curriculum that children's existing knowledge and experience should be the starting point for acquiring new understanding.	ICT extends the range of classroom learning tools it offers the teacher and the child. It affords the opportunity to select learning experiences that begin with each child's knowledge and experience, and are thus most meaningful to the child. *Additional uses of ICT to support this principle of learning include:* • Internet resources such as Web Quests offer the child a range of predetermined websites in a given content area. The child must choose the most appropriate sites to answer the complex questions provided in the Web Quest. • multimedia tools like video equipment enable children to record and chart their own learning progression • the combined range of ICT tools enable the teacher and child to maintain a useful record of each child's journey from the unknown to the known in the form of an electronic portfolio.
Environment-based learning The classroom environment is a vital determinant of the range of learning experiences accessible to children.	ICT extends the child's immediate learning environment, offering opportunities to push learning beyond the confines of the classroom. *Uses of ICT to support this principle of learning include:* • exploratory software, for example problem-solving simulations, enable children to experiment with procedures and processes which might not otherwise be possible • informational websites available through the Internet provide opportunities for children to learn about the world beyond their classroom • Communication technologies such as e-mail and video-conferencing, offer children opportunities to exchange information about their own local environment with others.

Learning through guided activity and discovery The curriculum underscores the importance of the teacher in providing effective learning experiences for each child. As the gatekeeper for the child's classroom learning, the teacher designs learning experiences that motivate children, offer feedback and advice, and provoke reflection.	ICT tools can support the teacher in scaffolding each child's particular path to learning. For example, curriculum-rich software offers the teacher and the child opportunities to structure both the level and sequence of content presented. These software programs typically include options for practice problems or workouts, and provide varied levels of feedback to children based on their performance. *Additional uses of ICT to support this principle of learning include:* • exploring and discovering information for projects and learning quests, through the use of Web quests, and other guided Internet searches supported by the teacher • learning to use digital equipment and tools supported by the teacher.
Learning through language The Primary School Curriculum stresses the vital role of language in children's development, and incorporates the use of talk and discussion as a central learning strategy in every Curriculum area.	ICT offers the child a motivational context for his or her engagement with content, and thus serves as a powerful stimulus for the child's talk about his or her learning experiences. When the child is given regular opportunities to discuss with peers and teachers what he or she knows and can do when using ICT, technology enhanced classrooms can provide a powerful catalyst for a child's learning in the primary school. *Additional uses of ICT to support this principle of learning include:* • multimedia tools and software may also provide opportunities for children to document, through audio or video or both, the interaction between language and experience, by recording their learning for later reflection and discussion.
The aesthetic dimension Valuing children's creative response to, and expression of, their own knowledge and experience is an important principle of the Primary School Curriculum.	ICT extends the range of opportunities for children's creative expression by offering a variety of content-free software tools, such as multimedia and art and design software, that support multiple methods of constructing, exploring, and representing knowledge. *Additional uses of ICT to support this principle of learning include:* • the Internet may offer a suitable site

	for publishing children's work on the school website, for viewing by parents and collaborating schools • presentation software offers children opportunities to share their work with others in the same class, within the school, with parents and partner schools, when they create and record examples of their work.
The social and emotional dimensions of learning The Primary School Curriculum recognizes that the child's social and emotional development significantly influences his or her success with learning in school.	ICT can offer children increased opportunities to experience success with learning. It extends the range of learning experiences afforded to children, offering opportunities to learn through visual, audio, and kinesthetic media, as well as through text. For example, content-rich software typically offers the child control over the level of information presented, the rate at which it is presented, as well as the formats for presenting information (Image, text, audio). *Additional uses of ICT to support this principle of learning include:* • ICT offers the child opportunities to develop social skills through turn taking, sharing resources, and helping other children in collaborative project work • collaborative classroom-based projects which use technology features such as e-mail, chat, threaded discussion, and video-conferencing can be used by children to support one another in the learning process.
The integration of learning The distinctions between subjects are not relevant to young children, and neither do subject demarcations characterize the nature of learning in the real world. The Primary School Curriculum emphasizes the importance of providing opportunities for children to make connections between their learning in different subjects. Authentic learning activities engage children in real-world tasks that transcend the boundaries between subjects.	ICT facilitates authentic learning by offering opportunities for children to experience the outside world within their own classroom. This experience is facilitated by using the Internet to find information, as well as providing facilities for the child to share their findings with others, using a range of communication tools – e-mail, threaded discussions, chats, and video conferencing. *Additional uses of ICT to support this principle of learning include:* • using content-free software, for example databases and spreadsheets, to enable children to undertake projects with interdisciplinary learning objectives, which emphasize the interconnectedness of knowledge and ideas.

The transfer of learning Children's ability to apply what they have learned to new situations is one key indicator of the success of their learning. By cultivating each child's ability to transfer learning, the teacher enables the child to overcome the problem of inert knowledge (knowledge that can be recalled when the child is prompted to remember it, but which he or she does not spontaneously use to solve problems). This is a central feature of the Primary School Curriculum.	ICT can support the child's appropriation of new knowledge by offering him or her a range of knowledge representation tools such as concept mapping software, presentation software and database software, which support the child's efforts in structuring his or her learning for later retrieval and application. *Additional uses of ICT to support this principle of learning include:* • the strong multi-sensory presentation style of much of ICT support software can support children's different learning styles • exploring problem-solving tasks in the controlled environment of a simulation or in an adventure format can support the child's learning by providing him or her with strategies which they can transfer to real life situations • using a science exploratory simulation software package to investigate the implications of controlling angles, forces, and motion, can aid the child in transferring what he/she has learned to a real-life situation.
Higher-order thinking and problem-solving Higher-order thinking involves asking questions, defining problems, examining evidence, analyzing assumptions and biases, considering alternative interpretations, tolerating ambiguity and so forth. The Primary School Curriculum promotes these learning experiences for all children across subjects.	The Internet offers teachers and children a wealth of authentic learning resources which, when pre-selected by the teacher, can support the development of children's abilities to question, to analyze, to investigate and to think critically. *Additional uses of ICT to support this principle of learning include:* • critical use of the Internet as an information resource will aid the development of children's abilities to search for, manage, evaluate, use, apply and create information • a variety of online formats, for example, topic hotlists and Web Quests, offer teachers opportunities to structure children's use of the World Wide Web (WWW) for achieving particular learning objectives • content-free software like databases, spreadsheets, and micro worlds offer children opportunities to interpret and manipulate data representations.

Collaborative learning While recognizing the importance of learning in a variety of classroom organizational structures, the Primary School Curriculum notes that opportunities for collaborative learning significantly contribute to the child's social and personal development. When children collaborate, the interactive exchange involves sharing the same goal, and engaging in shared decision-making.	ICT can extend and elaborate the possibilities for collaborative learning. It provides opportunities for children to construct knowledge collaboratively when working together on tasks using one computer. *Additional uses of ICT to support this principle of learning:* • children can work collaboratively when they use communication technologies such as e-mail and video-conferencing to collaborate with partners in learning in different schools or countries • The teacher can organize the classroom to facilitate cooperative learning, by organizing children to work in pairs, by promoting turn taking, and group work on different aspects of a project, with some groups completing tasks using ICT. Collaborative work in this way has the advantage of including and valuing the contributions of all children, including those with Special Educational Needs, and leads to positive learning outcomes for all those involved. For example, when working on a project, one group of children may paint, another group may write stories using the word processor, another group may be responsible for the collection of information from websites, another group use the encyclopedia, while another use the digital camera and scanner.
Taking account of individual difference *The Primary School Curriculum recognizes not only individual difference in learning, but factors that pertain to the child's home and community life, and it recommends that children benefit from differentiation in the selection and sequencing of curriculum content.*	Multiple pathways to learning which different ICT tools offer the child may enable the child to experience success with learning, and thereby positively influence the child's interest in the relevant curriculum subject. The possibilities for differentiation can be particularly supportive for the child with Special Educational Needs. *Additional uses of ICT to support this principle of learning include:* • content-rich software typically represents information through more than one format (text, audio, image, etc.), and provides options for the pacing and sequencing of information, so that instruction can be tailored to each child's individual learning needs and learning style

	• the range of content-free software available including writing, multimedia and concept mapping software, also supports children's different learning styles • the possibilities for the teacher to support the differentiation for the specific learning needs of individual children can be aided through the creation of worksheet templates, and reinforcement software for those children who require additional time practicing a skill or concept • ICT assessment tools such as electronic portfolios may also engage the child's interest in his or her learning by increasing the transparency of progress records.

The use of ICT in the primary school is consonant with the principles of learning which underpin the Primary School Curriculum. Additionally, the following principles for the use of ICT in the curriculum should be considered:

• The integration of ICT in the Primary School Curriculum should be directed toward enhancing teaching and learning

• The development of ICT skills should be embedded in learning objectives in the Primary

School Curriculum

• planning for ICT use should be at school level and should address key issues including the use of ICT for children with special needs, equality of ICT access for all children, and health and safety when using ICT

• The role of the teacher in planning, supporting, and assessing children's learning with ICT is central to the effective integration of ICT across the Primary School Curriculum

• Co-operation between home and school can facilitate the development of a common understanding about the use of ICT as a tool for lifelong learning.

C. ICT in Upper Primary & Secondary Stages:

Values:

Values guide decisions about curriculum and support students, teachers, parents, care takers and the community. The shared values are:

• Connectedness - developing a sense of community through friendship, care, compassion,

• Cooperation, acceptance, belonging and sharing

• Resilience - developing self-confidence and self-respect, optimism, perseverance and wellbeing

• Achievement - attaining success, pursuing excellence and being proud of personal achievement

• Creativity - valuing original ideas and demonstrating enterprise and innovation.

• Integrity - acting honestly, ethically, and consistently

• Responsibility - accepting individual and collective responsibility and contributing to sustainable community development

• Equity - developing tolerance, respecting difference and encouraging distinctiveness.

Purposes:

The shared purposes are that all students are learning to:

• learn

• live full, healthy lives

• relate, participate and care

• act ethically

• create purposeful futures, and

• think, know and understand.

Goals:

The shared goals are that they:

• are able to reason, question, make decisions and solve complex problems

• are able to create, communicate and convey ideas clearly and confidently

• have a positive vision for themselves and their future

• are well prepared to participate actively in our democratic community and as global citizens

• Can understand science and technology and make thoughtful decisions about their application.

Performance criteria:

Performance criteria are the core assessable aspects of learning and identify the typical achievement expected by students at each standard. Each performance criteria is described in detail in the ICT standards.

Performance criteria describe what students can typically do at each standard.

There are a total of eight performance criteria for the ICT Cross Curricular Framework, with two for each strand as described in the table below:

Strand	Performance criteria
Inquiring with ICT	1. Inquire and become critical information consumers 2. Inquire using appropriate strategies and tools
Creating with ICT	3. Create, edit and share information and ideas 4. Follow recognized conventions to express ideas and information
Communicating with ICT	5. Express identity, communicate appropriately and maintain safety and privacy 6. Contribute to and learn from others
Operating ICT	7. Use recognized procedures to maintain a secure, safe and efficient ICT environment 8. Understand how ICT components and systems are used to store and retrieve information

Teaching ICT:

Teaching for learning:

High quality teaching has a significant impact on student learning and achievement. Effective teachers of ICT:

- embed ICT into their daily routines
- build student ICT skills
- establish and maintain engaging, safe and challenging learning environments
- make learning fun, relevant and personal for all students
- understand the needs of learners and know how learning best occurs
- teach for understanding and make relevant connections across curriculum areas
- have high and achievable expectations of student achievement
- express clear values and purposes for education and learning in ICT
- design interesting, motivating and rewarding learning experiences
- build independent, self-regulated learners
- explicitly focus on thinking skills including inquiry and reflection
- explicitly teach literacy and numeracy skills
- use a diversity of teaching strategies
- critically reflect on their practice
- innovate in the classroom and collaborate with peers
- contribute to the learning of others beyond the classroom and school
- use ICT in their teaching, assessment and professional learning
- establish and nurture effective partnerships with parents and the school community

- use ICT as a set of tools for improving outcomes across the curriculum
- use assessment to improve student learning
- use assessment to inform their teaching
- establish and use networks for learning, teaching and assessing
- demonstrate a commitment to ongoing professional learning.

D. Cross-curricular perspectives

ICT in curriculum areas:

The goal of ICT in the curriculum in all but specialist IT courses is to use the technology as a key tool in all students' curriculum area-based learning. Most ICT knowledge, skills and understanding are developed and used in more than one curriculum area. For example, the knowledge and skills required to use spreadsheets to manipulate data is similar whether using it within Vocational and Applied Learning or Mathematics-numeracy. Common underlying principles are required for evaluating sources in a historical, literary or scientific inquiry. Skills that students develop in locating, accessing and evaluating appropriate resources in Society and History, Science or English-literacy are used in all areas of the curriculum and in students' everyday lives.

ICT in the Arts:

Students use ICT in order to create & record and revisit arts products, events and performances. They express their own ideas and communicate with others. Students use ICT in all arts forms and increasingly in new arts forms such as multimedia.

ICT supports reflection and communication, the interpretation, appraisal, analysis and creation of arts works and deeper examination of the place of the Arts in society.

ICT in English-literacy:

ICT in English-literacy helps students understand how people communicate using different modes. They develop skills in communicating, accessing, organizing and structuring information to refine ideas, collaborate and improve understanding.

ICT in Health and wellbeing:

In Health and wellbeing students use ICT to investigate issues and develop their understanding of physical, mental, emotional, social and spiritual health. They use ICT as tools to record practices such as movement, diet and behaviors, and to analyze, present and transform collected data and information. ICT are used as reflection and communication tools, to participate in local and global collaborative learning communities and are used to present and evaluate information to others.

ICT in Mathematics-numeracy:

Students use ICT in Mathematics-numeracy to develop skills in problem solving, communication and reasoning. They identify information needs and access information; organize, manipulate and transform data; and develop personal interpretations.

They apply mathematical and numerical skills and concepts and use ICT to generate and test hypotheses for accuracy and bias. They learn to communicate mathematical theories, findings and understanding.

ICT in Science:

In Science, the use of ICT enables students to acquire, evaluate, record, manipulate, integrate and communicate data and information, collected from their own original investigations or inquiries and that are accessible in scientific or other texts. It also supports student collaboration and communication in local and global scientific communities. ICT is of particular value in the acquisition of original scientific data. It allows measurements to be recorded and analyzed more precisely. Specifically designed science software can support students in developing an understanding of science concepts or in carrying out modeling and simulations for situations that it are not feasible to investigate experimentally (e.g. change in a population over a number of generations). In Science students use ICT to access an increasing range and quantity of data and information. They learn to evaluate information for authenticity, credibility, authority, validity, bias, accuracy and currency.

ICT in Society and History:

Students use ICT in Society and History to examine and evaluate information, develop justifications for value positions and beliefs, discuss issues and deepen their interpretations of issues and events. Through information and networks, students inquire, think critically, collaborate, make decisions and take action on significant issues. ICT provide students with an increasing range of information to develop their knowledge of the chronology and meaning of particular events and issues. Emerging geo-spatial technologies (e.g. GIS) enable highly systematic study of events, trends and issues.

ICT and thinking skills

ICT supports the development of a wide range of thinking skills. Students use ICT to present and access information, as a tutor, as a tool and as a support for dialogue and collaboration. Effective use of ICT for improved thinking skills depends on appropriate selection of ICT for a learning purpose, careful planning and genuine opportunities for students to apply ICT in different contexts for learning in and beyond the classroom.

Scope and sequence

A scope and sequence is a curriculum plan describing teaching content and the order in which it is taught. When planning or mapping curriculum in ICT, consideration be given to integrated learning sequences with ICT used as key teaching, learning and assessing tools. Planning or mapping curriculum in this way assists schools and teachers to:

- use ICT to enrich all subjects
- enable students to negotiate and personalize their learning
- enable students, parents and the community access to the ICT cross curricular

framework

- create yearly plans for grades or classes according to school need
- build conceptual understanding across grades or classes
- ensure ICT skills are built
- avoid repetition of content and make learning contextual and personalized
- effectively organize time, resources and facilities.

E. Curriculum Content:

Grade I

TOPIC: THEORY

TOPIC	OBJECTIVES Pupils should be able to:	CONTENT	SUGGESTED LEARNING ACTIVITIES AND NOTES
Rules and requirements of the computer laboratory.	State the basic rules to be observed in the computer laboratory Name the basic environmental conditions and security of the computer laboratory	The basic rules. Environmental conditions such as ventilation. Security of and in the computer room.	Formulating the rules as a class. Discussing the importance of environmental conditions and security.
Introduction to computers.	Identify computer hardware	**Hardware: Unit** Keyboard, Mouse, Screen, Speakers and Printers.	Pointing at and naming components of the computer. *NB: Teacher to restrict to available equipment.*

TOPIC: BASIC SETTINGS AND FILE MANAGEMENT

TOPIC	OBJECTIVES Pupils should be able to:	CONTENT	SUGGESTED LEARNING ACTIVITIES AND NOTES
Use of a mouse	Use the mouse	Mouse movement and control	Moving the pointer within diagrams/shapes Clicking on the left mouse button Playing games using the mouse
Desktop features	Use a drawing program	The drawing program icon e.g. paint	Pointing at the drawing icon using the mouse

TOPIC: WORD PROCESSING

TOPIC	OBJECTIVES Pupils should be able to:	CONTENT	SUGGESTED LEARNING ACTIVITIES AND NOTES
Loading a word processor program	Load a word processor using an icon.	Word processor	
Word processing features	Insert Auto shapes and pictures using the mouse	Auto shapes and pictures	Creating a picture story using several auto shapes and pictures
Keyboard keys and their uses.	Identify basic keyboard keys. Use the basic keyboard key.	Basic keyboard keys such as enter, backspace, caps lock and spacebar.	Pointing at and naming the basic keys. Playing games using the keyboard keys
Typing	Type letters of the alphabet in both lower and upper case. Type simple words and numbers	Letters of the alphabet. Simple words and numbers 0-50.	Writing simple words and numbers 0 to 50.
Text selection	Select text.	Shift and arrow keys.	Blocking text using the keyboard
Formatting text	Block text using the keyboard Bold text. Color text.	The bold icon. The font color icon.	Clicking the bold button Changing color of text.

TOPIC: PRESENTATIONS

TOPIC	OBJECTIVES Pupils should be able to;	CONTENT	SUGGESTED LEARNING ACTIVITIES AND NOTES
Drawing	Draw pictures of their choice	Drawing program e.g. paint	
Loading a presentation /drawing program	Open and close a drawing program		Manipulating the mouse to produce a drawing. Painting the drawings Closing a drawing programs

Grade II

TOPIC: THEORY

TOPIC	OBJECTIVES Pupils should be able to:	CONTENT	SUGGESTED LEARNING ACTIVITIES AND NOTES
Rules and requirements for the computer laboratory	State the basic rules to be observed in the computer laboratory Name the basic environmental conditions and security of the computer laboratory	The basic rules Environmental conditions such as ventilation Security of and in the computer laboratory	Formulating the rules as a class Discussing the importance of environmental conditions and security
Introduction to computers	Identify computer hardware	Hardware: System Unit Keyboard, Mouse and Screen, Speakers and Printers	Pointing at and naming components of the computer **NB**: *Teacher to restrict to available equipment*

TOPIC: BASIC SETTINGS AND FILE MANAGEMENT

TOPIC	OBJECTIVES Pupils should be able to:	CONTENT	SUGGESTED LEARNING ACTIVITIES AND NOTES
Desktop features	Identify icons by name	Names of icons	Pointing at specific program icons

TOPIC: WORD PROCESSING

TOPIC	OBJECTIVES Pupils should be able to:	CONTENT	SUGGESTED LEARNING ACTIVITIES AND NOTES
Loading and exiting a word processing program	Load and exit a word processor Type numbers and simple words	Letters of the alphabet, words, short sentences and numbers	Writing letters of the alphabet Writing numbers 0 to 100, simple words and

	Type simple sentences		sentences
Basic keyboard keys and their uses	Identify basic keyboard keys Use the basic keyboard key	Basic keyboard keys such as enter, backspace, caps lock, delete and spacebar	Pointing at and naming the basic keys Playing games using keyboard keys Applying knowledge learnt on basic keyboard keys
Opening, Saving and Exiting	Identify documents in a folder Retrieve documents from a folder Close a document Exit a program	Default location (My Documents) Close button	Launching a program, retrieving a document Saving and closing a document Exiting a program using the close button
Formatting text	Highlight Bold text Color text	Shift and arrow keys The bold icon The font color icon	Highlighting text Bolding text Changing color of text ***NB Emphasis should be on primary colors***
Word processing features	Insert auto shapes and pictures using the mouse	Auto shapes and pictures	Creating a picture story using several auto shapes or pictures

TOPIC: PRESENTATIONS

TOPIC	OBJECTIVES **Pupils should be able to;**	CONTENT	SUGGESTED LEARNING ACTIVITIES AND NOTES
Drawing	Draw and color in shapes	Drawing program icon	Drawing and coloring in shapes
Loading a presentation/ drawing program	Open and close a drawing program	Drawing program	Using the mouse to produce a drawing Closing a drawing program

Grade III

TOPIC: THEORY

TOPIC	OBJECTIVES Pupils should be able to:	CONTENT	SUGGESTED LEARNING ACTIVITIES AND NOTES
Rules and requirements for the computer laboratory.	Explain the basic rules to be observed in the computer laboratory. Name the basic environmental conditions and security of the computer laboratory.	The basic rules. Environmental conditions such as ventilation. Security of and in the computer laboratory.	Discussing the need for rules in the Computer room. Discussing the importance of environmental conditions and security.
Introduction to computers.	Identify computer hardware and software.	Input, output and storage devices: **Hardware:** System Unit, Keyboard, Mouse and Screen, Speakers and Printers, **Storage devices:** floppy disks, flash disk/memory stick compact disk (CD), digital video disk (DVD). Software	Drawing and labeling components of the computer. Differentiating between input and output devices. NB: Teacher to restrict to available equipment. Identifying the program in use.

TOPIC: BASIC SETTINGS AND FILE MANAGEMENT

TOPIC	OBJECTIVES Pupils should be able to:	CONTENT	SUGGESTED LEARNING ACTIVITIES AND NOTES
Starting up the computer	Switch on the computer	Power buttons	Identifying power buttons

			Turning on the computer
Starting program	Start program	Start button Start menu	Using the start button Selecting options from menu
Working with windows	Close windows using the close button	Close button	Using the close button

TOPIC: WORD PROCESSING

TOPIC	OBJECTIVES Pupils should be able to:	CONTENT	SUGGESTED LEARNING ACTIVITIES AND NOTES
Loading a word processor program	Load and exit a word processor program using a starter menu.	Word processor program	Opening and closing a word processor program
Word processing features	Insert and color auto shapes and pictures using the mouse	Auto shapes and pictures	Coloring auto shapes and picture
Typing	Type sentences	Sentences. Four Special Characters i.e.**! ? , .**	Writing sentences and special characters.
Basic keyboard keys and their uses.	Identify basic keyboard keys. Use the basic keyboard key.	Basic keyboard keys such as enter, backspace, caps lock, delete and spacebar.	Pointing at and naming the basic keys. Playing games using keyboard keys. Applying knowledge learnt on basic keyboard keys
Word processing setting	Identify the title bar and task bar	Title bar and task bar	Using the title bar and task bar.
Formatting text	Select/highlight text Block text. Bold text. Color text. Underline text	Shift and arrow keys and mouse The bold icon. The font color icon. The underline icon	Blocking text Bolding text. Changing color of text. Underlining text

TOPIC: PRESENTATIONS

TOPIC	OBJECTIVES Pupils should be able to;	CONTENT	SUGGESTED LEARNING ACTIVITIES AND NOTES
Drawing	Open a drawing program;	Drawing program icon, shapes, drawing and pictures	Opening the drawing program using shortcut

	Combine shapes and drawings; Save shapes and drawing.		Drawing according to teachers instructions Typing and clicking the save shortcut

Grade IV

TOPIC: THEORY

TOPIC	OBJECTIVES Pupils should be able to:	CONTENT	SUGGESTED LEARNING ACTIVITIES AND NOTES
Rules and requirements for the computer laboratory	Explain the basic rules to be observed in the computer laboratory. Name the basic environmental conditions and security of the computer laboratory	The basic rules Environmental conditions such as ventilation Security of and in the computer laboratory.	Discussing the need for rules in the Computer room. Discussing the importance of environmental conditions and security.
Introduction to computers.	Identify computer hardware and software.	Input, output and storage devices: **Hardware:** System Unit, Keyboard, Mouse and Screen, Speakers and Printers, **Storage devices:** Floppy disks, flash disk/memory stick compact disk (CD), digital video disk (DVD). **Software**	Drawing and labeling components of the computer Classifying input and output devices Listing the types of storage devices ***NB: Teacher to restrict to available equipment*** Identifying the Software in use by name and function

TOPIC: BASIC SETTINGS AND FILE MANAGEMENT

TOPIC	OBJECTIVES Pupils should be able to:	CONTENT	SUGGESTED LEARNING ACTIVITIES AND NOTES
Starting up and shutting down	Switch off the computer	Start menu Power buttons	Identifying power buttons Turning off the

			computer
Desktop features	Use the start button Use a mouse to start a program	Start button Program using a mouse	Identifying the start button Starting a program using a mouse
Printing using shortcut	Generate a hard copy	Print process	Printing using the print icon

TOPIC: WORD PROCESSING

TOPIC	OBJECTIVES Pupils should be able to:	CONTENT	SUGGESTED LEARNING ACTIVITIES AND NOTES
Loading a word processor program	Load a word using start menu Exiting a program using the close icon and close command in the file menu	Word processor program Close icon and close command in the file menu	Opening and closing a word processor program Exiting a program using the close button
Word processing features	*I*nsert and color auto shapes and pictures using the mouse	Auto shapes and pictures	Using the mouse to color auto shapes and pictures
Word processing setting	use the menu bar and scroll bars	Word processing screen: menu bar and scroll bars	Manipulating the menu and scroll bars
Typing	Type a short paragraph	Short paragraphs Punctuation Four Special Characters i.e. **! ? , .**	Typing short paragraphs and inserting correct punctuation marks
Text selection and correction	Select/highlight text using the shift and arrow keys and mouse Delete sentences	Shift and arrow keys and mouse Backspace and delete key	Blocking text Erasing sentences from right to left and from left to right
Basic keyboard keys and their uses	Identify numeric keyboard keys Use the numeric keyboard key	Short paragraphs that integrate the numeric keys	Playing games using keyboard keys
Opening and Saving	Identify documents in a folder Retrieve documents from a folder Save a document in the hard disk Close a document	Default location (My Documents) Double clicking the document in the folder Saving documents Close button	Launching a program Retrieving a document by double clicking it in the folder Using the save and open commands in the file menu Saving and closing a document

Formatting text	Block text Bold text Color text Underline text Align text Apply font size and type	The bold icon The font color icon The underline icon Alignment icons Font size and type icons	Blocking text Bolding text Changing color of text Underlining text Changing text alignment Aligning text Changing font size and text Using the scroll bar to see more fonts
Editing text	Copy and paste text	Copy and paste	Copying and pasting using the Edit command menu Copying and pasting using the icons ***NB*** *Activities to focus first on the Edit command menu before shortcuts are introduced*

TOPIC: PRESENTATIONS

TOPIC	OBJECTIVES Pupils should be able to;	CONTENT	SUGGESTED LEARNING ACTIVITIES AND NOTES
Loading a presentation program	Load a presentation program using a mouse;	Presentation program	Opening a presentation program Creating a blank presentation Typing basic text
Drawing	Open a drawing program; Combine shapes and drawings	Drawing program icon Saving drawings Shapes, drawings and pictures	Drawing according to instruction Using the short cut to save drawings

Grade V

TOPIC: THEORY

TOPIC	OBJECTIVES Pupils should be able to:	CONTENT	SUGGESTED LEARNING ACTIVITIES AND NOTES
Rules and requirements for the laboratory	Explain the basic rules to be observed in the computer laboratory Name the basic environmental conditions and security of the computer laboratory	The basic rules Environmental conditions such as ventilation Security of and in the computer laboratory	Discussing the need for rules in the Computer laboratory Discussing the importance of environmental conditions and security
Introduction to computers/ Computer hardware and software	Identify computer hardware and software List advantages and disadvantages of using computers	**Hardware:** *Input and output:* System Unit (CPU), Keyboard, Mouse and Screen, Speakers and Printers, *Storage devices:* floppy disks, flash disk/memory stick, compact disk (CD), digital video disk (DVD) **Software:** System and application software Advantages and disadvantages of using computers	Drawing and labeling components of the computer Classifying input and output devices Listing the types of storage devices *NB: **Teacher to restrict to available equipment*** Identifying different system and application software Discussing the advantages and disadvantages of using computers

TOPIC: BASIC SETTINGS AND FILE MANAGEMENT

TOPIC	OBJECTIVES Pupils should be able to:	CONTENT	SUGGESTED LEARNING ACTIVITIES AND NOTES
Starting up and shutting down	Select options for shutting down computers	Shutting down options	Applying different options for shutting down

Use of mouse	Perform different tasks by double clicking the mouse	Double clicking	Playing games using the mouse
Settings	Adjust date and time settings Identify Task bar and its function	Date and time settings Task bar functions	Checking current date and time Changing date and time settings using shortcut Minimizing and restoring using mouse
My computer icon	Identify drives and folders on the computer	A, C, and D drives	Opening C drive Distinguishing folders from files
Deleting files and folders	Delete files and folders from the C drive	C drive files and folders	Deleting files and folders
Recycle bin concept	Identify the recycle bin and its uses	Recycle bin icon	Opening recycle bin Closing recycle bin
Desktop features	Use short cut menu for desktop displays	Desktop displays using shortcut menu	Applying desktop displays using shortcut menu
Printing	Print documents using the shortcut	Printing	Applying the printing technique using an icon
Screen savers	Set screen savers on the monitor	Screen savers	Selecting and applying screen savers
Loading a word processor program	Load a word processor using start menu Close a document Exit a program	Word processor Close button	Using the start menu to load a word processor

TOPIC: WORD PROCESSING

TOPIC	OBJECTIVES Pupils should be able to:	CONTENT	SUGGESTED LEARNING ACTIVITIES AND NOTES
Word processing features	Insert symbols, pictures and text Design patterns using auto shapes;	Symbol, pictures and text Patterns	Selecting symbols and pictures Identifying patterns
Typing	Type a paragraph	Short paragraphs Punctuation Special Characters!**? , % $ ( )**	Typing short paragraphs
Text selection and correction	Select/highlight text Delete sentences	Shift and arrow keys and mouse. Backspace and delete	Blocking text Erasing sentences from right to left and

		key	from left to right
Keyboard keys and their uses	Identify numeric keyboard keys Use the numeric keyboard key	Short paragraphs that integrate the numeric keys	Playing games using keyboard keys
Saving and opening documents	Open, save and close documents in the hard disk	Open, save and close commands in the file menu	Opening, saving and closing a document
Formatting Text	Block text Bold text Color text Underline text Align text Apply font size and type	The bold icon The font color icon The underline icon Alignment icons Font size and type icons	Bolding text Changing color of text Underlining text Aligning text Changing font size and text
Editing Text	Copy and paste text Move text	Copy and paste Cut and paste	Copying and pasting using the Edit command menu Copying and pasting using the icons Cutting and pasting using the Edit command menu Cutting and pasting using the icons *NB Activities to focus first on the Edit command menu before shortcuts are introduced*
Word Processing Setting	Set word processing screen using tool bars and scroll bars	Tool bars and scroll bars	Using scroll bars to find information Applying the tool bars to access information

TOPIC: PRESENTATIONS

TOPIC	OBJECTIVES Pupils should be able to;	CONTENT	SUGGESTED LEARNING ACTIVITIES AND NOTES
Loading a presentation program	Load a presentation	Presentation program	Viewing of different available slides Adding text to a slide Saving the presentations
Drawing	Save drawings	Drawings	Saving the drawings
Opening and closing a presentation	Open and close existing presentation	Presentations	Typing in the file name

			Saving in the correct folders
Formatting text	Format text on slides Apply font, color and size on text	Slides, font, color and size	Changing the font size Changing the text color

TOPIC: SPREADSHEETS

TOPIC	OBJECTIVES **Pupils should be able to;**	CONTENT	SUGGESTED LEARNING ACTIVITIES AND NOTES
Introduction to a Spreadsheet	Describe the spreadsheet structure Create a spreadsheet	Spreadsheet structure: Columns, rows, column headings, row headings, cells, cell names, cell pointer, sheet tabs, navigating in the spreadsheet	Explaining what constitutes a spreadsheet Explaining the difference between workbooks and worksheets Creating a spreadsheet-spreadsheet structure, cursor manipulation
Spreadsheet Formatting	Set width adjustments; Insert formatting cells and page cells	Width adjustments Formatting cells and page breaks	Formatting a spreadsheet
Saving and Opening Documents	Open, save and close documents in the hard disk	Open, save and close commands in the file menu	Opening, saving and closing using the file menu

GRADE VI

TOPIC: THEORY

TOPIC	OBJECTIVES Pupils should be able to:	CONTENT	SUGGESTED LEARNING ACTIVITIES AND NOTES
Rules and requirements for computer laboratory	Explain the basic rules to be observed in the computer laboratory.	The basic rules.	Discussing the need for rules in the Computer laboratory and the consequences of breaking the rules.
Introduction to computers/ Computer hardware and software	Identify different types of computers Identify computer hardware and software. Identify computer viruses and their causes List advantages and disadvantages of using computers	Different types of computers: Laptops, palmtops, notebooks, PC, mainframe, supercomputer. Hardware: *Input devices:* Keyboard, Mouse Output devices Speakers, Printers and Screen, *Storage devices:* Floppy disks, flash disk/memory stick compact disk (CD), digital video disk (DVD). **Software:** System and application software Computer viruses, causes and effects Advantages and disadvantages of using computers	Compare the different types of computers. Entering data using the input devices. Discussing the suitability in the application of different types of storage devices. *NB: Teacher to restrict to available equipment.* Discussing the problems resulting from computer viruses. Discussing the advantages and disadvantages of using computers
Information Communication	Identify the benefits and limitations in the	Internet and e-mail.	Demonstrating how to access internet.

Technology (ICT)	use of Internet and email.		Sending and receiving e-mail

TOPIC: BASIC SETTINGS AND FILE MANAGEMENT

TOPIC	OBJECTIVES Pupils should be able to:	CONTENT	SUGGESTED LEARNING ACTIVITIES AND NOTES
Shutting down options	Distinguish restart from shut down	Shut down windows	Restarting the computer
Use of mouse	Perform tasks using the mouse right clicking.	Use of mouse right clicking	Identifying tasks which require the use of mouse right clicking.
Desktop features	Rearrange icons Use short cut menu for desktop display.	Icons Desktop displays	Arranging icons by name, date, size Using auto arrange option
Screen savers	Change settings of screen savers on the monitor	Screen saver settings	Selecting screen savers
Settings	Adjust time, date and volume using short cut Adjust date	Date, time and volume settings	Checking current date and time changing date and time settings using shortcut
My computer icon	Delete files and folder from hard disk. Open C drive Create folders/files Search for files/folders	C drives Files and folders Deleting files and folders	Inserting storage media in appropriate drives Opening drives
Recycle bin	Display and empty the recycle bin	Recycle bin icon	Opening recycle bin Emptying recycle bin
Printing	rint using shortcut	Printing	Using the shortcut command to print

TOPIC: WORD PROCESSING

TOPIC	OBJECTIVES Pupils should be able to:	CONTENT	SUGGESTED LEARNING ACTIVITIES AND NOTES
Loading a word processor program	Access word processing using start menu and icon.	Word processor icon	Opening word using both mouse and keyboard
Word processing features	Insert symbols and pictures Insert text	Symbols and pictures Auto shapes	Creating patterns using auto shapes

	Design patterns using auto shapes		
Word processing setting	Use tool bars and scroll bars	Word processing Screen: tool bars and scroll bar	Identifying tool bars and scroll bars
Typing	Type compositions and letters	Punctuated compositions and letters Special Characters **! ? , .; " " ( ) % $ # @ ` * < >**	Typing compositions and letters.
Text selection and correction.	Select text using the shift and arrow keys and mouse Correct spellings and grammar	Shift and arrow keys and mouse Errors: spellings and grammar.	Blocking text Erasing sentences from right to left and from left to right. *N.B. Non English and scientific words are treated as errors by the computer. Teacher is to use discretionary powers. Correction of errors is taught progressively.*
Keyboard keys and their uses.	Identify functions frequently used. Manipulate the entire keyboard keys.	Keyboard keys and their uses	Using QWERTY in document manipulation and production.
Saving and opening documents	Open commands in the file menu Retrieve documents saved Save documents in hard disk and other media	Opening, saving and closing a document in the hard disk (C-drive) and other media Open, save and exit commands	Storing documents in different media Retrieving a document by using the open command in the Open dialogue box Opening documents in different media
Formatting Text	Bold text. Color text. Underline text Align text Apply font size and type Space lines Apply Word Art Print documents	The bold icon. The font color icon. The underline icon Alignment icons Font size and type icons Line spacing Word Art Print outs	Bolding text. Changing color of text. Underlining text Aligning text Changing font size and text Spacing lines Applying word art Printing documents
Editing Text	Cut and paste text Copy and paste text	Cutting and pasting Copying and pasting	Copying and pasting using the Edit

	Change case Find and replace words	Lower and upper case Replacing words	command menu Copying and pasting using the icons Cutting and pasting using the Edit command menu Cutting and pasting using the icons *N.B. Activities to focus first on the Edit command menu before shortcuts are introduced.* Changing lower to upper case and vice versa Finding words Replacing words

TOPIC: PRESENTATIONS

TOPIC	OBJECTIVES Pupils should be able to;	CONTENT	SUGGESTED LEARNING ACTIVITIES AND NOTES
Loading a presentation program	Load a presentation program	Presentation program	Loading a presentation
Drawing	Add drawings	Drawings	Inserting drawing and adding color to pictures
Slide creation	Create presentations using more challenging slides Insert pictures to a presentation Save presentations	Presentations using slides Pictures	Creating presentations Saving presentations
Opening and closing presentation	Open and close existing presentations	Open and save	Opening and closing existing presentation
Formatting text	Format text on slides Apply font, color, type and size.	Font, color, type and size	Changing font, color, type and size.
Slide show	View a slide show Add transition effects Apply design templates Animate slides Present a slide show Print slides	Slide show Transition: normal view and slide shorter view Design templates Animation effects: Preset and custom Slide show	Viewing a slide show Applying transition effects on slide Selecting a transition effect from the drop down list. Choosing the speed of the transition. Selecting

		Presentation Printing	objects which is to be animated Selecting slides to be printed

TOPIC: SPREADSHEETS

TOPIC	OBJECTIVES Pupils should be able to;	CONTENT	SUGGESTED LEARNING ACTIVITIES AND NOTES
Introduction to a spreadsheet	Identify functions of spreadsheets Create a Spreadsheet	Basic spreadsheet concept Spreadsheet structure Spreadsheet navigation and simple functions Spreadsheet structure: Columns, rows, column headings, row headings, cells, cell names, cell pointer, Sheet tabs, navigating in the spreadsheet, select all button.	Explaining what constitutes a spreadsheet. Explaining the difference between workbooks and worksheets Creating a spreadsheet- spreadsheet structure, cursor manipulation
Saving and opening documents	Open, save and close documents	File retrieval Saving Closing Exiting	Retrieving, saving, closing, and exiting a file in a specific location such as 'My Documents'.
Spreadsheet formatting	Insert rows and columns Adjust rows and columns Preview documents before printing	Insert :Rows, columns, Worksheet Delete :Rows, columns, Worksheet Adjust row height, column width Rename a Worksheet Block/highlight specific cells Preview and printing	Editing a spreadsheet by inserting and deleting rows and columns. Adjusting row height and column width. Blocking/highlighting specific cells, such as TOTAL's, use the 'fill color' button. *Preview document before printing a must.*
Charts and graphs	Create a chart/graph	Column and bar chart/graph	Creating a bar and column chart/graph using information from a created spreadsheet. Using the insert- chart menu

TOPIC: INFORMATION COMMUNICATION TECHNOLOGY

TOPIC	OBJECTIVES Pupils should be able to;	CONTENT	SUGGESTED LEARNING ACTIVITIES AND NOTES
Internet	Set internet Make a connection using shortcut Disconnect the internet connection Install security features	Internet icon Web sites Search engines Security issues	Opening the internet Opening different websites Typing/Selecting search engine Entering search criteria/subject Disconnecting using shortcut
e-mail	Set e-mail account Identify and open mailbox Create mail Send mail Reply mail Opening in-box Delete message	e-mail account Mailbox e-mail message Inbox deleting	Opening the mailbox Composing mail Sending mail Opening inbox Replying to mail Signing out

Grade VII

Strand I: Inquiring with ICT

Performance criteria	Objectives: Stage 1	Objectives: Stage 2
Inquire and become critical information consumers	• use subject directories and describe the difference between a subject directory and a search engine • create detailed bibliographies • validate the content of some websites to check for accuracy	• use a range of search methods and justify the best one for a given task • use an online bibliography composer • assess the relevance of an information source to a particular inquiry
Inquire using appropriate strategies and tools	• reflect on how a specific educational game/learning object can increase understanding • interact in a favored online network routinely for research • reflect on the results of own solutions applied to a simulation	• discuss the negative and positive consequences of choices made while playing an online learning game • exchange reflective feedback in response to evolving web content such as blogs • use simulation tools to solve problems based on 'real-world' scenarios

Strand II: Creating with ICT

Performance criteria	Objective: Stage I	Stage II
Create, edit and share information and ideas	• present a digital product to an audience and evaluate it according to their feedback • integrate a range of ICT tools to plan,	• analyze how ICT tools were used to influence audience within a digital product • use advanced features of software to create a digital product

	create and present a digital product • edit sound, graphics, text and images for desired special effects	• manage and edit original source materials such as photos and sound files with software
Follow recognized conventions to express ideas and information.	• analyze data within a spreadsheet, representing it in alternative modes • demonstrate refined layout, style and content e.g: insert tables incorporating borders and shading • distinguish between copyright and copy left material and respect these protections	• create data Representations following recognized conventions • maintain consistency of style within a digital product • seek and follow advice from intellectual property guidelines

Strand III: Communicating with ICT

Performance criteria	Objective: Stage I	Stage II
Express identity, communicate appropriately and maintain safety and privacy	• identify and consistently follow online etiquette (netiquette) • educate others about online etiquette (netiquette) and explain associated key terms such as 'flame wars' and 'cyber bullying' • outline an appropriate course of action such as 'delete and ignore' in response to inappropriate messages • present an appropriate identity when participating in online networks	• describe ethical and unethical use of specific communication tools • understand what cyber crime is and describe the impact it has on society • discuss issues relating to online identity e.g it's okay to assume an avatar identity in a game but not to deceive others with a fake identity
Contribute to and learn from others	• collaborate locally and globally online, valuing the contributions of others • send messages and files to groups • upload appropriate material created with a digital device to an	• collaborate to decide on, participate in, reflect on and share the outcomes of a suitable online exchange project • describe some types of collaborative software (groupware) applications outlining

	online space	when they are useful • compare how materials are stored, created, distributed and shared with different devices

Strand IV: Operating ICT

Performance criteria	Objective: Stage I	Stage II
Use recognized procedures to maintain a secure, safe and efficient ICT environment	• implement a set of backup procedures for personal data • use an application's 'Help' facility to identify an appropriate course of action for solving specific problems • understand what ergonomic design is and why it is so important for ICT environments	• state and justify school rules about data and software downloads • identify what many ICT acronyms stand for and what they mean • discuss ergonomic design
Understand how ICT components and systems are used to store and retrieve information	• identify the function of a file by its extension, e.g. .exe,.com and.dll all indicate programs • recognize an Operating System as managing input, output, processing and storage so that they all work together • describe the interrelationships between a system's main components	• implement a logical system of organizing personal files into folders and sub-folders • differentiate between software types • give a comprehensive account of a system's components

Grade VIII

Strand I: Inquiring with ICT

Performance criteria	Objective: Stage I	Stage II	Stage III
Inquire and become critical information consumers	• collect web based bookmarks relevant to inquiries • cite sources in a consistent manner throughout a research presentation • analyze 'hoax' websites and evaluate how convincing they are	• collect, organize and share web based bookmarks • use preferred or recommended citing and referencing guidelines • evaluate the accuracy, credibility and currency of information sources	• use the Internet as a research tool, routinely seeking information from a variety of websites • cite references consistently following agreed conventions • validate the credibility of information sources
Inquire using appropriate strategies and tools	• articulate problem solving strategies used to successfully complete online learning games and challenges • interact as a member of an online community to discuss, compare and clarify ideas • demonstrate effective decision making in a Simulation environment and reflect on how those decisions could influence 'real-world' scenarios	• share, reflect on and modify educational game strategies for improved results • demonstrate intellectual integrity within an online community • produce an inquiry based simulation or game	• modify strategies and solve complex problems when playing interactive educational games • participate in an online community such as a forum as an inquiry strategy • demonstrate effective use of a simulation tool and discuss its application to 'real world' contexts

Strand II: Creating with ICT

Performance criteria	Objective: Stage I	Stage II	Stage III
Create, edit and share information and ideas	• identify the needs of a specific audience, manipulating digital tools to meet needs • collaborate to create a multi-media presentation • edit a digital product following advice from a source such as a digital editing online tutorial	• entertain, influence or persuade a specific audience by presenting an original digital product to them • analyze the use of ICT tools and roles of people involved in creating an effective multi-media presentation • use advanced functions of editing software to refine productions	• create digital products that inform, entertain, influence or persuade • determine quality design specifications for an ICT product and follow the specifications to create a product • use advanced editing functions to refine a digital product for desired effects
Follow recognized conventions to express ideas and information	• create a variety of data representations that are functional and correctly formatted • layout text and graphics effectively in digital products • describe different forms of Intellectual Property e.g. copyright, copy left, patents, trademarks	• present a digital product that illustrates, analyses and reports data • produce digital products that display a broad and refined use of conventions • identify why people may seek a Creative Commons license	• collect, analyze, represent, organize and manage data with digital tools • create digital products that illustrate a broad use of conventions appropriate to text type • demonstrate understanding of intellectual property and copyright laws

Strand III: Communicating with ICT

Performance criteria	Objectives: Stage I	Stage II	Stage III
Express identity, communicate appropriately and maintain safety and privacy	• share materials responsibly respecting self and others • demonstrate an ethical awareness of cyber crime by reflecting on and discussing cyber crime as reported in the media • discuss how online	• promote and demonstrate application of netiquette protocols • raise awareness about the potential harm cyber crime can cause and promote protection messages • analyze and evaluate	• identify appropriate codes of conduct for ICT communications • outline the forms that cyber crime can take and describe how to avoid being a victim of it • establish and maintain appropriate online identities to

	identity might differ from one's physical persona	networking websites for their ability to protect user identity	broaden social, intellectual and extra-curricular networks
Contribute to and learn from others	• understand how to design, create, draw participants to and moderate forums • trial a range of collaborative software (groupware) tools for communicating with peers • use devices ethically to create, distribute and share materials	• demonstrate increased understanding from participating in an online exchange project • select and use appropriate collaborative software (groupware) solutions for a purpose • pose concerns and opportunities when discussing the potential impact of emerging technologies on society	• contribute to the learning of others and learn from others in online exchange projects • enhance group work by using a range of collaborative software • demonstrate awareness of the latest technology news and emerging devices

Strand IV: Operating ICT

Performance criteria	Objective: Stage I	Stage II	Stage III
Use recognized procedures to maintain a secure, safe and efficient ICT environment	• describe potential threats to the security of systems and data • recognize that many ICT issues can be divided into hardware, operating system or application issues • predict trends in the impact of ICT on health and lifestyle	• describe some data and system protection measures such as firewalls • provide advice on preventing ICT problems and upgrading systems • promote best practice in occupational health and safety (OHS)	• demonstrate understanding of network security risks, protection and prevention strategies • apply problem solving and troubleshooting progressions for the efficient operation of tools • identify occupational health and safety concerns and solutions for ICT environments
Understand how ICT components and systems are used to store and retrieve information	• interpret file addresses as comprising strings of drives, folders, servers and/or network shares	• understand how to compress and decompress files and identify why this may be necessary • discuss	• maintain files in a clear, logical structure demonstrating understanding of file size, type and naming

	• understand that connected devices often require device drivers to be added to the operating system to function as predicted • understand 'firmware', where it resides (ROM) and how it may be periodically upgraded	interoperability issues relating to hardware, software, systems and networks • describe a type of network architecture such as a local area network (LAN)	conventions • understand the field of ICT sufficiently to be an effective consumer of ICT goods and services • demonstrate understanding of basic network concepts

F. Assessment

Effective assessment

The main purpose of assessment is to improve student learning. Assessment is an ongoing process of gathering and using evidence of student achievement.

Effective assessment enables

• Students to better understand their progress towards goals and become more knowledgeable and self-directed in their learning

• Teachers to make more informed judgments about student progress and design more effective teaching programs, and

• Parents and care givers to better understand and support student learning and achievement.

Effective assessment emphasizes

• Assessment for learning – teachers using evidence of student progress to inform their teaching

• Assessment as learning – students reflecting on and evaluating their progress to inform future learning goals, and

• Assessment of learning – teachers using evidence of student learning to make individual and collective judgments on student achievement against specific curriculum goals and standards.

Assessing ICT

The ICT cross curricular framework provides teachers with a broad range of opportunities for students to show what they know and can do. It provides scope for students to contribute diverse and valid evidence of their learning across the curriculum as well

as within ICT. The use of ICT also helps to make assessing and reporting more efficient for students and teachers.

Effective assessment methods include:

• Informal assessment – students and teachers making representative judgments about what they have learned on a regular basis

• Formal assessment tasks – students demonstrating achievement against explicit criteria that are known prior to undertaking a learning task

• Observations or anecdotal records – teachers taking informal notes while working with students

• Checklists – teachers recording a snapshot of student knowledge, skills and understanding

• Portfolios – students building up carefully selected collections of their work over time

• Weblogs – students documenting their ongoing reflections about their thinking and understanding.

On-balance judgment

A final decision about whether students are rated as competent or not competent is made using an on-balance judgment. An accurate on-balance judgment considers:

• The consistency of student performance over a period of time

• Clear indications of progress from first attempts to current performance

• Demonstration of knowledge, processes and skills in different contexts

• The validity of the assessment task in relation to the intended outcomes

• Whether there is evidence of achievement to rate a student as competent

• Relative performance on similar tasks by peers

• Teacher reflection and collaboration to increase consistency and validity of judgment