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The Cayman Islands

National Curriculum
2007

Information and communication technology
Programme of study and attainment targets for
Key Stages 1, 2 and 3

Cayman Islands Government

Acknowledgements

The overview document sets out the guiding philosophy and principles of the new Cayman Islands curriculum. It guides all the subject documents and approaches to teaching and learning in the revised curriculum.

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Aims

Learning information and communication technology (ICT) contributes to the achievement of the curriculum aims for all young people (the 'educated Caymanian') to become:

- Enthusiastic and motivated about learning, and willing to continue to extend his/her knowledge and skills after leaving school
- Well rounded, good at finding solutions to problems, flexible and adaptable to changing circumstances and demands
- Literate, numerate and adept at using information and communication technology
- Have an awareness of global issues affecting life in the 21st century
- Confident individuals who are able to live safe, healthy and fulfilling lives

The ICT curriculum strives to

- Provide students with opportunities to produce, store and communicate information in a variety of ways
- Teach students to use a range of tools to enhance creativity and higher order thinking
- Explore a variety of ways in which information is stored and transmitted
- Explore ways in which communication is used and misused in a range of societies and the impact information has had, and will continue to have, on the development of Caymanian society

ICT now depends increasingly on digital devices and other electronic forms.

ICT refers to a range of tools that allow learners to access, store, retrieve, manipulate, present and re-present information electronically. These tools also encourage and allow for creativity and higher order thinking.

ICT includes tools such as facsimile machines, telephones, computers and video equipment. Computer software allows manipulation of information and electronic media and is also considered a tool within ICT.

Networks (local, national and international) provide the ability for learners to share, collaborate and communicate. Examples of such networks including phone systems, local area networks (LAN) and the Internet.

ICT should be viewed as a set of tools that can be integrated and learned within the breadth of the teaching and learning programmes. Whilst some ICT skills may be developed in discrete lessons, ICT is not a separate or discrete subject.

Overview

Information is defined as being a collection of data which has been assembled in such a way as to make it useful to society. Communication includes the interpretation and the passing on of information. No society has ever prospered without developing skills in the storage and transmission of information and the Cayman Islands have benefited enormously from the growth of ICT in recent years. The need to keep abreast of developments in this area is pivotal to the continued success of this country and for all its people.

How teachers should use the programme of study and attainment targets

The programme of study identifies the experiences and opportunities that students must be given to enable them to achieve the knowledge, skills and understanding specified in the attainment targets.

The strands

The programme for ICT is divided into four strands:

i. Finding things out
ii. Developing ideas and making things happen (assessed within two contexts - measurement and control, and modelling)
iii. Exchanging and sharing information
iv. Reviewing, modifying and evaluating work as it progresses

This division into strands is a convenient way of emphasising the outcomes for ICT education in schools. It does not mean that learning in each strand has to be developed independently.

Progression in this subject requires students to develop these strands in parallel. They should start with activities linked to themselves and their immediate environment and move on to less familiar situations and contexts.

The attainment targets specify the knowledge, understanding and skills that students should acquire through the key stage. More detail is given about how to interpret them in appendix 1.

Information and communication technology programme of study for Key Stage 1

Introduction

During Key Stage 1 students should explore ICT and learn to use it confidently and with purpose to achieve specific outcomes. They start to use ICT to develop their ideas and record their creative work.

Finding things out

Students should be given opportunities to:

- Gather information from a variety of sources *(for example, people, books, databases, CD-ROMs, videos and TV)*
- Enter and store information in a variety of forms *(for example, storing information in a prepared database, saving work)*
- Retrieve information that has been stored *(for example, using a CD-ROM, loading saved work)*

Developing ideas and making things happen

Students should be given opportunities to:

- Use text, tables, images and sound to develop their ideas
- Select from and add to information they have retrieved for particular purposes
- Plan and give instructions to make things happen *(for example, programming a floor turtle, placing instructions in the right order)*
- Try things out and explore what happens in real and imaginary situations *(for example, trying out different colours on an image, using an adventure game or simulation)*

Exchanging and sharing information

Students should be given opportunities to:

- Share their ideas by presenting information in a variety of forms *(for example, text, images, tables, sounds)*
- Present their completed work effectively *(for example, for public display)*

Reviewing, modifying and evaluating work as it progresses

Students should be given opportunities to:

- Review what they have done to help them develop their ideas
- Describe the effects of their actions
- Talk about what they might change in future work

Suggested activities

Students become familiar with hardware and software and develop the knowledge, skills and understanding through:

- Working with a range of information to investigate the different ways it can be presented *(for example, information about the sun presented as a poem, picture or sound pattern)*
- Exploring a variety of ICT tools *(for example, floor turtle, word processing software, adventure game)*
- Talking about the uses of ICT inside and outside school

Information and communication technology programme of study for Key Stage 2

During Key Stage 2 students should use a wider range of ICT tools and information sources to support their work in other subjects. They develop their research skills and decide what information is appropriate for their work. They begin to question the plausibility and quality of information. They learn how to amend their work and present it in a way that suits its audience.

Finding things out

Students should be given opportunities to:

- Talk about what information they need and how they can find and use it *(for example, searching the internet or a CD-ROM, using printed material, asking people)*
- Prepare information for development using ICT, including selecting suitable sources, finding information, classifying it and checking it for accuracy *(for example, finding information from books or newspapers, creating a class database, classifying by characteristics and purposes, checking the spelling of names is consistent)*
- Interpret information, to check it is relevant and reasonable and to think about what might happen if there were any errors or omissions

Developing ideas and making things happen

Students should be given opportunities to:

- Develop and refine ideas by bringing together, organising and reorganising text, tables, images and sound as appropriate *(for example, desktop publishing, multimedia presentations)*
- Create, test, improve and refine sequences of instructions to make things happen and to monitor events and respond to them *(for example, monitoring changes in temperature, detecting light levels and turning on a light*
- Use simulations and explore models in order to answer 'What if ... ?' questions, to investigate and evaluate the effect of changing values and to identify patterns and relationships *(for example, simulation software, spreadsheet models)*

Exchanging and sharing information

Students should be given opportunities to:

- Share and exchange information in a variety of forms, including e-mail *(for example, displays, posters, animations, musical compositions)*
- Sensitive to the needs of the audience and think carefully about the content and quality when communicating information *(for example, work for presentation to other students, writing for parents, publishing on the internet)*

Reviewing, modifying and evaluating work as it progresses

Students should be given opportunities to:

- Review what they and others have done to help them develop their ideas
- Describe and talk about the effectiveness of their work with ICT, comparing it with other methods and considering the effect it has on others *(for example, the impact made by a desktop-published newsletter or poster)*
- Talk about how they could improve future work
- Working with a range of information to consider its characteristics and purposes *(for example, collecting factual data from the internet and a class survey to compare the findings)*
- Working with others to explore a variety of information sources and ICT tools *(for example, searching the internet for information about a different part of the world, designing textile patterns using graphics software, using ICT tools to capture and change sounds)*
- Investigating and comparing the uses of ICT inside and outside school

Suggested activities

Students should develop the knowledge, skills and understanding through:

- *Working with a range of information to consider its characteristics and purposes (for example, collecting factual data from the internet and a class survey to compare the findings)*
- *Working with others to explore a variety of information sources and ICT tools (for example, searching the internet for information about different parts of the world, designing textile patterns using graphics software, using ICT tools to capture and change sounds)*
- *Investigating and comparing the uses of ICT inside and outside school*

Information and communication technology programme of study for Key Stage 3

During Key Stage 3 students become increasingly independent users of ICT tools and information sources. They have a better understanding of how ICT can help their work in other subjects. They develop their ability to judge when and how to use ICT and where it has limitations. They think about the quality and reliability of information, and access and combine increasing amounts of information. They become more focused, efficient and rigorous in their use of ICT, and carry out a range of increasingly complex tasks.

Finding things out

Students should be given opportunities to:

- Be systematic in considering the information they need and to discuss how it will be used
- Obtain information well matched to purpose by selecting appropriate sources, using and refining search methods and questioning the plausibility and value of the information found
- Collect, enter, analyse and evaluate quantitative and qualitative information, checking its accuracy *(for example, carrying out a survey of local traffic, analysing data gathered in fieldwork)*

Developing ideas and making things happen

Students should be given opportunities to:

- Develop and explore information, solve problems and derive new information for particular purposes *(for example, deriving totals from raw data, reaching conclusions by exploring information)*
- Use ICT to measure, record, respond to and control events by planning, testing and modifying sequences of instructions *(for example, using automatic weather stations, datalogging in fieldwork and experiments, using feedback to control devices)*
- Use ICT to test predictions and discover patterns and relationships, by exploring, evaluating and developing models and changing their rules and values
- Recognise where groups of instructions need repeating and automate frequently used processes by constructing efficient procedures that are fit for purpose *(for example, templates and macros, control procedures, formulae and calculations in spreadsheets)*

Exchanging and sharing information

Students should be given opportunities to:

- Interpret information and reorganise and present it in a variety of forms that are fit for purpose *(for example, information about a charitable cause presented in a leaflet for a school fundraising event)*
- Use a range of ICT tools efficiently to draft, bring together and refine information and create good-quality presentations in a form that is sensitive to the needs of particular audiences and suits the information content
- Use ICT, including email, to share and exchange information effectively *(for example, web publishing, video conferencing)*

Reviewing, modifying and evaluating work as it progresses

Students should be given opportunities to:

- Reflect critically on their own and others' uses of ICT to help them develop and improve their ideas and the quality of their work
- Share their views and experiences of ICT, considering the range of its uses and talking about its significance to individuals, communities and society
- Discuss how they might use ICT in future work and how they would judge its effectiveness, using relevant technical terms
- Be independent and discriminating when using ICT

Suggested activities

Students should develop the knowledge, skills and understanding through:

- *Working with a range of information to consider its characteristics, structure, organisation and purposes (for example, using database, spreadsheet and presentation software to manage membership and finances of a club and present the annual report)*
- *Working with others to explore a variety of information sources and ICT tools in a variety of contexts*
- *Designing information systems and evaluating and suggesting improvements to existing systems (for example, evaluating a website or researching, designing and producing a multimedia presentation for a science topic)*
- *Comparing their use of ICT with its use in the wider world*

Appendix 1 Attainment targets

The learning outcomes or attainment targets are expressed at eight levels of increasing difficulty. These levels are the same for all key stages and are not age or year-group-dependent, which will make it easier to see how a student progresses as he/she moves up the year groups and from primary to secondary school.

Students learn at different rates and, therefore, individual students or groups of students of the same age could be working towards different levels within and across the key stage boundaries. By the end of a key stage, **most** students should be performing at the **'expected'** level, but some will be above this level and others will be below.

The range of levels covered by the key stage and the 'expected' levels for the end of each key stage are given in the table below:

Key Stage	Year Groups	Range of levels covered by the programme of study	Expected level at end of the Key Stage
1	1 - 3	1-3	2
2	4 - 6	2-5	4
3	7 - 9	3-7	5 or 6

Teachers will be expected to make judgements about the levels attained by each of their students, particularly at the end of a key stage. In deciding on a student's level of attainment, teachers should judge which description in the attainment targets best fits the student's performance. When doing so, each description should be considered alongside those for adjacent levels. It is not necessary for a student to have satisfied the entire range of a particular level to be awarded it.

It can be helpful to divide levels into three sub-levels to support tracking of progress and target setting.

For example:

- 3a – Represents a performance that demonstrates a good understanding of all the descriptors in level 3
- 3b – Represents understanding of the majority of level 3 descriptors
- 3c– Represents understanding at level 2a (ie the full understanding of the previous level) plus an understanding of some of the descriptors at level 3

Appendix 2 Attainment targets for information and communication technology

Strand i Finding things out

Level 1	Level 2	Level 3	Level 4	Level 5	Level 6	Level 7	Level 8
• Students explore information from various sources, showing they know that information exists in different forms.	• Students use ICT to organise and classify information and to present their findings. • They enter, save and retrieve work.	• Students use ICT to save information and to find and use appropriate stored information, following straightforward lines of enquiry.	• Students understand the need for care in framing questions when collecting, finding and interrogating information. • They add to, amend and combine different forms of information from a variety of sources.	• Students select the information they need for different purposes, check its accuracy and organise it in a form suitable for processing.	• Students develop and refine their work to enhance its quality, using information from a range of sources. •Where necessary, they use complex lines of enquiry to test hypotheses.	• Students select and use information systems suited to their work in a variety of contexts. •They translate enquiries expressed in ordinary language into the form required by the system.	•Students suggest refinements to existing systems. •They design, implement and document systems for others to use, predicting some of the consequences that could arise from the use of such systems.

Strand ii Part 1: Developing ideas and making things happen – measurement and control

Level 1	Level 2	Level 3	Level 4	Level 5	Level 6	Level 7	Level 8
•Students recognise that many everyday devices respond to signals and instructions.	•Students plan and give instructions to make things happen and describe the effects.	•Students use sequences of instructions to control devices and achieve specific outcomes.	•Students use ICT systems to control events in a predetermined manner and to sense physical data.	•Students create sequences of instructions to control events, and understand the need to be precise when framing and sequencing instructions. •They understand how ICT devices with sensors can be used to monitor and measure external events.	•Students develop, try out and refine sequences of instructions to monitor, measure and control events, and show efficiency in framing these instructions.	•Students use ICT to measure, record and analyse physical variables and control events.	•Students make appropriate use of feedback when developing systems that respond to events.

Strand ii Part 2: Developing ideas and making things happen - modelling

Level 1	Level 2	Level 3	Level 4	Level 5	Level 6	Level 7	Level 8
•Students make choices when using such devices to produce different outcomes.	•Students use ICT to explore what happens in real and imaginary situations.	•Students make appropriate choices when using ICT based models or simulations to help them find things out and solve problems.	•Students use ICT based models and simulations to explore patterns and relationships, and make predictions about the consequences of their decisions.	•Students explore the effects of changing the variables in an ICT based model.	•Students use ICT based models to make predictions and vary the rules within the models. •They assess the validity of these models by comparing their behaviour with information from other sources.	•Students design ICT based models and procedures with variables to meet particular needs.	•Students evaluate software packages and ICT based models, analysing the situations for which they were developed and assessing their efficiency, ease of use and appropriateness.

Strand iii Exchanging and sharing information

Level 1	Level 2	Level 3	Level 4	Level 5	Level 6	Level 7	Level 8
•Students use ICT to work with text, images and sound to help them share their ideas.	•Students use ICT to help them generate, amend and record their work and share their ideas in different forms, including text, tables, images and sound.	•Students use ICT to generate, develop, organise and present their work •They share and exchange their ideas with others	•Students use ICT to present information in different forms and show they are aware of the intended audience and the need for quality in their presentations	•Students use ICT to structure, refine and present information in different forms and styles for specific purposes and audiences •They exchange information and ideas with others in a variety of ways, including using email	•Students present their ideas in a variety of ways and show a clear sense of audience	•Students combine information from a variety of ICT based and other sources for presentation to different audiences	•Students independently select appropriate information sources and ICT tools. They use them to address specific tasks, taking into account ease of use and the suitability of the communication

Strand iv Reviewing, modifying and evaluating work as it progresses

Level 1	Level 2	Level 3	Level 4	Level 5	Level 6	Level 7	Level 8
•Students talk about their use of ICT.	•Students talk about their experiences of ICT both inside and outside school.	•Students describe their use of ICT and its use outside school.	•Students interpret their findings, question their plausibility and recognise that poor quality information leads to unreliable results. •They compare their use of ICT with other methods and with its use outside school.	•Students discuss their knowledge and experience of using ICT and their observations of its use outside school. •They assess the use of ICT in their work and are able to reflect critically in order to make improvements in subsequent work.	•Students identify the advantages and limitations of different information handling applications. •They take part in informed discussions about the use of ICT and its impact on society.	•Students consider the benefits and limitations of ICT tools and information sources and the results they produce, and they use these results to inform future judgements about the quality of their work.	•Students take part in informed discussions about the social, economic, ethical and moral issues raised by ICT.