



UNIVERSITY *of* CAMBRIDGE
International Examinations

Cambridge
Primary

Cambridge
Secondary 1

SYLLABUS

**Cambridge International Diploma
ICT Starters (Initial Steps, Next Steps, On Track)**

For examination in 2014

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1. Introduction

1.1 Why choose Cambridge?

University of Cambridge International Examinations is the world's largest provider of international qualifications. Around 1.5 million students from 150 countries enter Cambridge examinations every year. What makes educators around the world choose Cambridge?

Recognition

Cambridge qualifications are internationally recognised by schools, universities and employers. Learn more at www.cie.org.uk/recognition.

Support

Cambridge provides a world-class support service for teachers and exams officers. We offer a wide range of teacher materials to Centres, plus teacher training (online and face-to-face) and student support materials. Exams officers can trust in reliable, efficient administration of exams entry and excellent, personal support from Cambridge Customer Services. Learn more at www.cie.org.uk/teachers.

Excellence in education

Cambridge qualifications develop successful students. They not only build understanding and knowledge required for progression, but also learning and thinking skills that help students become independent learners and equip them for life.

Not-for-profit, part of the University of Cambridge

Cambridge is part of Cambridge Assessment, a not-for-profit organisation and part of the University of Cambridge. The needs of teachers and learners are at the core of what we do. Cambridge invests constantly in improving its qualifications and services. We draw upon education research in developing our qualifications.

1.2 Why choose Cambridge International Diploma ICT Starters?

Information and Communications Technology (ICT) is now part of the educational experience of children in most parts of the world. Taught as a subject in its own right, as well as being embedded within the curriculum, ICT is increasingly regarded as a new 'literacy', alongside reading, writing and numeracy. Cambridge ICT Starters is designed to introduce students to the key ICT applications they need to use, in order to acquire that literacy and to understand the impact of technology on our daily lives. The syllabus provides a framework in which ICT competence and practical skills can be developed within an environment that is appropriate for the age of the students. It also provides a structured scheme of assessment. Modules can be delivered according to the needs of each learning situation – across the curriculum or as a separate course of study. At each stage of assessment, students will use ICT to:

- communicate
- handle information
- model
- measure and control

This syllabus operates at three levels of the University of Cambridge International Examinations Framework for Qualifications:

- Initial Steps
- Next Steps
- On Track

1.3 How can I find out more?

If you are already a Cambridge Centre

You can make entries for this qualification through your usual channels. If you have any queries, please contact us at **international@cie.org.uk**.

If you are not a Cambridge Centre

You can find out how your organisation can become a Cambridge Centre. Email us at **international@cie.org.uk**. Learn more about the benefits of becoming a Cambridge Centre at **www.cie.org.uk**.

1.4 The international dimension

Cambridge ICT Starters acknowledges the competencies valued in ICT around the world. Cambridge has mapped the syllabus against national standards in a number of countries, so that the skills assessed reflect the performance standards demanded in an international context.

The syllabus is available in English and Spanish. Subject to Cambridge guidelines, Centres may also translate the syllabus and administer assessment tasks in any local language (please contact Cambridge Customer Services for more details).

1.5 Target group

Cambridge ICT Starters are predominantly aimed at students aged between 5 and 15 years. The qualifications are suitable for those in primary and secondary education.

2. Assessment at a glance

2.1 Structure

Each level of the scheme contains two stages, each with an equal number of modules. Centres can teach the modules in any order, although candidates must achieve all modules at Stage 1 for a Cambridge ICT Starters Stage 1 certificate and all modules at both stages for a Full certificate.

	Initial Steps	Next Steps	On Track
Stage 1 modules	3	4	4
Stage 2 modules	3	4	4

Each module contains a short *Introduction* explaining the purpose of the module, followed by the *Learning Objectives* table. This table shows which skills must be assessed for that module, along with further details about the evidence the students must produce to demonstrate that they have achieved the Learning Objectives. Each module then sets out *Getting Started* advice for the teacher, to help them plan the delivery of the module, and finishes with an *Assessment Guidelines* section.

You can obtain further advice from the Cambridge website about how you can join our discussion group forum for teachers of Cambridge ICT Starters: <http://www.cie.org.uk>.

2.2 Form of assessment

At the end of each module, Centres must assess students in an assessment test, to show that they can demonstrate each of the *Learning Objectives* with no additional help from their teacher or their peers.

It is a requirement of this syllabus that Centres use Cambridge ICT Starters question papers, as provided to Centres by Cambridge, or Cambridge approved question papers. If Centres wish to create their own assessment tasks, or to adapt the Cambridge question papers (for example, in order to tailor them towards curriculum topics or the local learning environment), Centres must submit their proposed papers to Cambridge for approval. Question papers that a Centre has already submitted to Cambridge within a previous entry do not need to be approved. For more information, please contact international@cie.org.uk.

At the end of each assessment test, the teacher marks the question papers and completes a record of assessment (*Learning Objectives Record Sheet*) for each student. The teacher should make a photocopy of this sheet for each student and must sign each sheet. Centres must send samples of students' work to Cambridge for external moderation; please see Section 4. The sample must include the question papers completed by the students, the required evidence of students' work and the *Learning Objectives Record Sheet*. Cambridge will not return the samples, so Centres should keep a copy of each student's submission.

Important note: In some cases, Cambridge accepts that it is not possible or practical to submit hard copy evidence for a particular *Learning Objective*. Where the *Learning Objectives* table states 'Teacher Evidence', Cambridge relies on the professionalism of teachers to sign the sheet, confirming that they have observed the students achieving that objective.

Students will receive a Pass or Merit grade in each assessment test. A student's overall grade will be a combination of the results of all modules.

To achieve a Pass in a module, students must meet all the Pass criteria specified on the *Learning Objectives Record Sheet*. To achieve a Merit in a module, students must achieve all the Pass **and** Merit criteria within that module.

Cambridge will award a Merit grade for each level of Cambridge ICT Starters where the student has achieved Merit grades in the majority of modules taken at each stage or level:

Level	Stage 1 certificate	Full certificate
Initial Steps	2 or more modules	4 or more modules
Next Steps	3 or more modules	5 or more modules
On Track	3 or more modules	5 or more modules

Assessment tests should take place in a classroom environment under controlled conditions. Tests will take less time at lower levels than at higher levels, but no assessment test should exceed 1 hour (Initial Steps) or 1½ hours (Next Steps/On Track). For some modules, particularly at On Track level, students may need to do some preparatory work so that they can complete the assessment test in the allowed time.

Submission of a student's work for moderation is available on demand. This enables the formal assessment of a student's skills to take place at any time of the year, to fit in with the needs of the individual or that of the school's curriculum.

2.3 Certification

Students must complete all modules at both stages in order to achieve a Full certificate at a particular level.

Successful completion of the Stage 1 modules will lead to the Cambridge ICT Starters Stage 1 certificate at the appropriate level, stating the grade achieved overall.

Successful completion of all Stage 1 and Stage 2 modules will lead to the Cambridge ICT Starters Full certificate at the appropriate level, stating the grade achieved overall. For the Full certificate, Centres can submit work all at once (i.e. all modules together), as an alternative to two separate stages.

2.4 Progression

Each stage of Cambridge ICT Starters has been designed to facilitate progression through the scheme. Students will develop the skills demanded for particular applications through each level, so that they can build on the competence they have achieved previously.

Initial Steps	Next Steps	On Track
Stage 1	Stage 1	Stage 1
Starting Text (4269)	Exploring Documents (4278)	Documents for a Purpose (4289)
Starting Images (4270)	Exploring Images (4279)	Multimedia for a Purpose (4290)
Starting Graphs (4271)	Exploring Spreadsheets (4280)	Spreadsheets for a Purpose (4291)
	Exploring Databases (4281)	Databases for a Purpose (4292)
Stage 2	Stage 2	Stage 2
Starting Control (4272)	Exploring Control (4282)	Control for a Purpose (4293)
Starting Searches (4273)	Exploring the Internet (4283)	Website Design for a Purpose (4294)
Starting Email (4274)	Exploring Email (4284)	Networks for a Purpose (4295)
	Exploring Multimedia (4285)	Video or Animation for a Purpose (4296)

There is no requirement for students to complete one full level before progressing to the following level; Centres may decide to enter students for Stage 1 only. However, at each level above Initial Steps, it is assumed that the student possesses the relevant skills and knowledge of the earlier levels. Students wishing to progress from the On Track level, or those who require formal assessment above this level, are encouraged to develop their practical skills in a more integrated, work-related context. Please refer to the Cambridge website (www.cie.org.uk) for information on further Cambridge ICT qualifications.

2.5 Maintaining the Cambridge International Examinations standard

University of Cambridge International Examinations must ensure the integrity of its assessment procedures, so that everyone can have full confidence in the wide range of qualifications offered and the associated standards. In applying for Registered Centre status, Centre staff acknowledge that they will conduct the scheme carefully, to the standards described in the individual Qualification syllabuses.

When an institution applies to become a Registered Centre for the first time, Cambridge will assess the suitability of staff, premises, resources and procedures, before allowing the Centre to operate Cambridge Qualifications.

To ensure quality, Cambridge Moderators externally moderate all assessments. The final decision on the performance of a student will rest with the Principal Moderator for the specific module.

2.6 Fees

You can obtain details of fees for these qualifications from Cambridge Customer Services.

3. Syllabus content

The Programmes of Study outlined below suggest the range of concepts which should be taught, whether or not they are explicitly assessed. Students' real life experience of using ICT (including mobile phones, MP3 players and computer games) should be acknowledged and referred to whenever relevant.

3.1 Initial Steps – programme of study

Students should learn to use ICT equipment and software confidently and purposefully to communicate and handle information, and to support their problem-solving, recording and expressive work. They should be taught to reflect, discuss and consider the implications of using ICT equipment.

Skills developed

Students should learn to:

- Use equipment and develop knowledge of ICT
 - use a variety of ICT equipment and software (which may include various kinds of computers and keyboards, as well as TV, DVD, video devices, music players and personal organisers) to carry out a variety of functions in a range of contexts
 - explore the use of computer systems and control technology in everyday life
 - examine and discuss their experiences of ICT, and look at the use of ICT in the outside world
- Communicate using ICT
 - begin to assemble text and pictures to communicate ideas in different forms using words, tables, pictures and sound
 - create, redraft and present ideas using text manipulation, laying out text, checking for errors and correcting them
 - utilise a paint or graphics package to present ideas
- Handle information using ICT
 - explore and use a variety of methods to enter and store information onto a computer
 - classify information using ICT
 - store, retrieve and process information that has been stored in a pre-prepared database or spreadsheet
- Measure and control using ICT
 - recognise that control is part of many everyday activities and devices
 - give simple commands to control a device or virtual device
- Model using ICT
 - understand that computers can be used to represent real or fantasy situations and that there is a difference between the representation and the reality
 - explore real or imaginary situations in computer simulations by making decisions within a computer simulation which affect it
 - give commands to an input device within a computer simulation
 - investigate options within a simulation or game, posing questions or making decisions

3.2 Next Steps – programme of study

Students should learn to extend the range of ICT tools they use for communication, investigation and control; they should use ICT to select information, sources and media that are suitable for their purpose and assess the value of ICT in their work.

Skills developed

Students should learn to:

- Use equipment and develop knowledge of ICT
 - use ICT to explore and solve problems in the context of work across a variety of subjects
 - use ICT to further their understanding of information that they have retrieved and processed
 - discuss their experience of using ICT and assess its value in their work
 - investigate parallels with the use of ICT in the wider world, consider the effects of such uses and compare them with other methods
- Communicate using ICT
 - use ICT equipment and software to communicate ideas and information in a variety of forms, incorporating text, graphs, pictures and sound, as appropriate, showing sensitivity to the needs of their audience in choice of layout, typeface or graphics as well as considering the most appropriate use of such tools to present their ideas or argument
 - use equipment and software to organise, reorganise and analyse ideas and information
- Handle information using ICT
 - interrogate information that has been stored, developing the need to take care in framing questions when collecting, accessing or interrogating information
 - interpret, begin to analyse and check the plausibility of information held on ICT systems, and select the elements required for particular purposes
 - select suitable information and media, and classify and prepare information for processing with ICT, checking for accuracy
- Control and monitor using ICT
 - use simple commands to control a device
 - understand the difference between inputs and outputs and develop commands to control them
 - use a sequence of commands to control a device including inputs and outputs
 - use sensors to gather and record data for a purpose and be able to give simple interpretations of the data gathered

3.3 On Track – programme of study

Students should learn to become critical and increasingly autonomous users of ICT, aware of the ways in which ICT tools and information sources can help them in their life and work. They should understand the limitations of such tools and of the results they produce, and use the concepts and relevant technical terms associated with ICT systems and software.

Skills developed

Students should learn to:

- Use equipment and develop knowledge of ICT
 - use ICT equipment and software autonomously
 - consider the purposes for which information is to be processed and communicated
 - use their knowledge and understanding of ICT to design information systems, and to evaluate and suggest improvements to existing systems
 - investigate problems by modelling, measuring and controlling, and by constructing ICT procedures
 - consider the limitations of ICT tools and information sources, and of the results they provide, and compare their effectiveness and efficiency with other methods of working
 - discuss some of the social, economic, ethical and moral issues raised by ICT
- Communicate and handle information using ICT
 - use a range of ICT equipment and software efficiently to create good quality presentations for particular audiences, integrating information from several sources
 - select appropriate ICT equipment and software to fulfil a specific purpose
 - be systematic and critical in their use of appropriate search methods to obtain accurate and relevant information from a range of sources
 - collect and amend quantitative and qualitative information for a particular purpose, and enter the information into a data-handling package for processing and analysis
 - interpret, analyse and display information, checking its accuracy and questioning its plausibility
- Control, monitor and model using ICT
 - plan, develop, test and modify sets of instructions and procedures to control events
 - use a system that responds to data from sensors, and explain how it makes use of feedback
 - use ICT equipment and software to measure and record physical variables
 - explore a given model with a number of variables and create models of their own, in order to detect patterns and relationships
 - modify the rules and data of a model, and predict the effects of such changes
 - evaluate a computer model by comparing its behaviour with data gathered from a range of sources

In working towards the On Track level students will learn to become critical and independent users of ICT. They will develop their awareness of how ICT tools and information can help them in their work. They will appreciate the limitations of such tools and their results, and use the concepts associated with ICT systems and technical vocabulary.

Throughout **ALL** assessment tests, students should demonstrate the following:

- **autonomous use of ICT equipment and software**
- **a consideration of the limitations of ICT tools and information sources, and the results they provide**
- **comparisons of the effectiveness of ICT efficiency with other working methods**
- **use of a range of ICT equipment and software to create good quality presentations for varied audiences**
- **selection of appropriate ICT equipment and software to fulfil the assessment tests**
- **systematic use of appropriate search methods to obtain accurate and relevant information from a range of sources**

Initial Steps modules

Starting with Text (4269)

Introduction

In this module, students are introduced to text/word processing software to create and edit short pieces of text. The aim is to learn how to input text using the keyboard, to use the mouse to move around within the document and to access features, like print, save and spellcheck. They learn how to save and retrieve documents. They begin to understand how to use the software to improve the accuracy of their work.

Learning objectives

Learning objectives	Pass/Merit	Assessment evidence	Amplification of assessment criteria
1 Enter simple words using keyboard or other input device	P	See below	Students can use a keyboard to input a short piece of text (20–30 words) unaided – this could be their own original work, or copied from given text. Additional words could be entered using software word bank.
2 Select and edit text	P	See below	Students should be able to select words, copy and paste words, delete words, add words and change words or punctuation within the text. To achieve this learning objective, students need to be able to make changes to the text but are not necessarily able to spot errors themselves.
3 Select basic icons (e.g. print, save or spellcheck) using the mouse	P	A printout of their work covering the first three learning objectives (LO1–LO3), which they can use later to check for errors (LO5)	Students should be confident enough with the software to be able to select icons such as save, print and use the spellchecker (if available) without assistance. This learning objective is concerned with the student's ability to find and select tools, rather than knowing how to use them efficiently. Saving a document with an incorrect filename, or selecting an incorrect option from the spellchecker, should not disqualify this LO being awarded.
4 Name, save and retrieve documents	M	See below	Students show that they can name and save a document in the appropriate place (e.g. USB memory stick, floppy disk or hard disk) and can retrieve it later, without the teacher's help, to make changes to it.
5 Use appropriate methods to check text is error free	M	Teacher evidence or printout	Students use a combination of proof reading (on screen or printed) and use the spellchecker (if available), to ensure that final text has been checked and corrected, without the teacher's help.

Getting started

Students can use any word or text processing software for this module; however, it may be beneficial to choose software which is appropriate to the age and abilities of the students, which maybe includes audio support. Also, at this level, teachers might consider the use of software word banks as well as using other ways of inputting text, e.g. handwriting using a slate (electronic) or interactive whiteboard. If using software such as MS Word or the word processor from AppleWorks, it might be useful to change the toolbar options so that icons such as save and print appear as large buttons, and the menus and toolbars are limited to those the students will need to use. It may also be useful to change the default font to a large and easy-to-read font type, so that students find it easier to link what they are typing with what they see on screen.

If this module is taught first, students may need plenty of practice to become familiar with the keyboard and mouse, and may benefit from simple guidance about the use of the computer.

Prior knowledge	New words	
<ul style="list-style-type: none"> • Recognise simple words and characters • Understand the mouse controls the pointer • Write simple sentences • Use full stops and capital letters • Use a space to separate words in written text 	<ul style="list-style-type: none"> • Program • Software • Mouse • Cursor/Pointer • Drag • Screen/Monitor • Keys/Keyboard • Select • Space bar • Font • Caps Lock 	<ul style="list-style-type: none"> • Edit • Delete • Print/Printer • Icon • Text • Shift • Return/Enter • Backspace • Copy/Cut/Paste • Highlight/Select • Word bank • Word processing

Assessment guidelines

Both Pass and Merit students are required to show that they can enter text and use the software to make changes to the text. However, in addition to this Merit students are required to demonstrate that they can save and retrieve their own work as well as show some ability to use the software independently to produce work which is error free, without assistance. Pass students should, on the other hand, be showing competence using the software but may need prompting to spot errors or to retrieve previously stored work.

The assessment of this module might include a piece of text to copy, with errors included. After entering the text, students could be instructed to change some of the errors within the text. The initial text, along with a printout of the student's work, should then give sufficient evidence for the first three Learning Objectives. Merit students would be assessed further, on being able to save and retrieve their work as well as on completing some independent error checking by themselves. You can enable them to achieve this either by asking them to spot and amend any remaining errors within the original text, or by providing them with a new document which they can retrieve and save as their own, implementing the changes necessary to make it error free.

Starting Images (4270)

Introduction

This module introduces students to the use of graphics software for creating, editing and saving pictures, by giving them the skills to choose and use a number of simple graphical tools.

Students will learn how to draw and modify simple pictures or patterns, using a combination of lines, simple shapes and fill tools: they will learn to select colours, shapes and line widths from a simple tool palette.

They will use select, cut, copy, paste and undo commands to modify their work, and will save the finished picture.

Learning objectives

Learning objectives	Pass/ Merit	Assessment evidence	Amplification of assessment criteria
1 Use simple shapes and lines to create pictures or patterns	P	See below	Students will not be expected to use the 'curved line' or 'squiggle' tools at this stage. Students are not expected to save their work at Pass level.
2 Edit pictures using visual effects	P	See below	Students should fill at least three of the white spaces with an appropriate tool, such as brush, spray and fill, to create colour effects, line textures or patterns.
3 Add details to an existing picture, using straight lines or geometric shapes	P	Printout of picture (and original given to students)	Students are not expected to make major changes, such as adding or deleting a character or object.
4 Copy or delete character or object	M	Printout of final picture	For this level, students should be able to amend substantially the original given picture, by selecting a particular object and either deleting it entirely (restoring the background), or copying and pasting it elsewhere in the picture.
5 Use 'save as' to store edited pictures	M	Teacher evidence or printout	The important thing is to demonstrate that the student has been able to save with a new filename.

Getting started

You will need a graphics package with a range of tools and edit features. For whatever software you use, demonstrate how to use the tools, such as spray, pen, cut and other simple tools, and how to use 'undo' or selecting tools to correct a mistake. Show how to use 'save' or 'save as'.

Provide a range of stimulus material and opportunities for students to edit/change pictures and to create their own pictures and designs. (For example, ask students to edit pictures to show/change emotions e.g. happy/sad etc.) Ask students to print out their completed pictures.

It will be helpful to collect a range of children's books with good illustrations, as well as artwork from other sources, for students to see and discuss in preparation for making their own pictures.

You will also need to have several prepared files for students to modify: these should be simple pictures, with plenty of white space which can be filled in by the student, using the tools they have learned.

Prior knowledge	New words	
<ul style="list-style-type: none"> • Mouse control • Select and load software 	<ul style="list-style-type: none"> • Graphics • Icon • Pencil tool • Brush tool • Spray tool • Fill • Cut, Copy, Paste 	<ul style="list-style-type: none"> • Line • Texture • Save/Save as • Select • Undo • Print

Assessment guidelines

Students could be asked to draw simple pictures of, for example, a house with two windows and a door (mostly squares/rectangles), or a face or flower (mostly circles/ellipses and some lines). Alternatively, they might produce a pattern, using rows of coloured or patterned squares, circles or rectangles, each joined up to the next by a coloured line like a toy snake or caterpillar. (This allows students to select combinations of shapes, to fill colours or patterns, and to select line thickness and colour.)

The pictures you provide for students to modify should be simple, with plenty of white space for students to fill in, and with opportunities for them to add details to the picture or remove details from it. Keep the demands of the task simple, by leaving plenty of space between the objects or shapes which students need to modify or remove (so that they will not find it too difficult to select the shape or object that they need to edit). At Pass level, students could be asked to add some extra coloured shapes and lines to a pattern or, for example, add a sun to a picture of a house; at Merit level, students might remove, for example, an object or character and place it elsewhere in the picture.

Starting Graphs (4271)

Introduction

In this module, students begin to understand how to use ICT to classify information and present their findings in the form of simple charts or graphs. Students start to understand how they can use graphs and charts to answer questions or compare information.

Learning objectives

Learning objectives	Pass/Merit	Assessment evidence	Amplification of assessment criteria
1 Store and classify information	P	See below	Students should be able to sort and classify properties of objects, for example eye colour of classmates. They should be able to use ICT to create a tally chart or data table, or to enter the data into graph/chart software.
2 Present information in charts or graphs	P	Printout of graphs	Students use the information they have entered to create two different but simple graphs or charts. The choice of graphs/charts will depend on the software available, but it could be a pie chart, bar chart or pictogram. The teacher should prescribe which data is selected to present in the chart.
3 Use charts or graphs to answer simple questions	P	Students' answers to set questions	Students can answer specific simple questions from the graph/chart they have created, for example "Which eye colour was the least common?" or "How many girls had brown eyes?" It is important to construct questions so that students can make different observations about the data for LO4 below.
4 Draw simple conclusions from charts or graphs	M	Teacher evidence or printout	Students, unprompted by a specific question, can make at least two sensible but simple general statements or observations about the data from the graphs they have drawn, for example "My charts show that blue is the most common eye colour" or "There is no difference between the eye colours of boys and girls".

Getting started

Students could use simple graphing or charting software for this module, for example MS Excel or the spreadsheet from AppleWorks. It might be useful to change the toolbar options so that the icons, like save and print, appear as large buttons, and so that the menus and toolbars are limited to those the students will need to use. It may also be useful to change the default font to a large and easy-to-read font type, so that students find it easier to link what they are typing with what they see on screen. If this is the students' first use of data-handling software, it might be appropriate to begin with pictograms, with one symbol representing one object, and to develop into other kinds of graph at a later stage.

If students are using a spreadsheet to create different graphs, and they are new to this type of software, teachers could create a graph in advance, linking it to a table on the spreadsheet. The students could then enter their own numbers into the spreadsheet table, so the graph would automatically display as a graph. This could support students in understanding graphs before they have to use the software to create their own graphs from scratch.

Students may need to sort real objects to fully understand how ICT can be used to represent or classify objects; it may be necessary to organise the results into summary tables or tally charts, so that the students can make sense of the information. You should support students when they are creating graphs or charts, to make sure that they produce sensible graphs/charts. Keep data sets small, so that students can easily check they have entered data accurately.

A useful starting point for this module is to ask what questions graphs can help us answer, and to look at questions which real life charts and graphs have been designed to answer. Encourage students to discuss which questions their own graphs could and could not answer. Such discussion will help the students to understand why graphs and charts can be useful to answer real questions.

Encourage good practice: for example, checking information for errors, giving charts a title and labelling axes.

When practising what sort of conclusions can be drawn from graphs/charts, encourage students to mention similarities as well as differences, so they develop an understanding that both are equally important observations.

Prior knowledge	New words	
<ul style="list-style-type: none"> • Students can sort objects into groups • Students can use the keyboard and mouse to enter information into the computer • Students can understand simple data organised in a table or tally chart 	<ul style="list-style-type: none"> • Information • Pictogram • Icons • Collect • Sort 	<ul style="list-style-type: none"> • Classify • Bar chart • Graph • Pie chart • Data

Assessment guidelines

Both Pass and Merit students should be able to enter some prepared data into a simple graphing software package. They should be able to describe the data they have entered and to make statements like “This data shows how many children have different eye colours in our class”. All students should be able to use the software to create two different charts from the data they have entered, and should be able to answer simple specific questions, like “How many boys have brown eyes?” Merit students should be able to suggest which questions their chart could answer and which it could not. The students should then generate and answer the questions. Also, Merit students need to be able to show that they have an appreciation of what information the chart/s show in a real context, by making at least two sensible general observations/statements from the charts they have created, such as “There is no difference between boys and girls in eye colour” or “Blue is the most common eye colour”. Being able to identify and express a general statement (unaided) is a step further for the student than answering specific questions, because it implies that the student understands how to interpret what they see in the real context of what the data in the chart/graph is showing, rather than simply being able to read a value from a chart or graph.

A single screen capture or printout of the charts/graphs produced by the students would be sufficient, if the students have written their observations on these before or after printing.

Starting Control (4272)

Introduction

In this module, students learn to control the actions of a screen turtle by giving a series of instructions, and they should consider examples of how we can control machines and devices: for example, selecting sweets or a drink from a vending machine, setting a microwave oven to cook some food, or recording a television program using a DVD/video recorder.

Give the students opportunities to consider instructions for a range of activities, not just those involving a screen turtle: for example, they might give one another directions for moving from one place to another in the classroom, or using simple maps. Where resources allow, they might also give instructions to control the actions of a floor turtle. In all cases, encourage students to use instructions involving distance and direction, and to predict the consequences of a set of instructions.

Learning objectives

Learning objectives	Pass/ Merit	Assessment evidence	Amplification of assessment criteria
1 Give a screen turtle a set of instructions to achieve a specified objective	P	Printed copy of task set and screen capture of turtle path	This should be a very simple task, for example to move onscreen to hit down a skittle or visit an area, requiring only the use of forward and backward moves, or 90 and 180 degree turns, for the first three moves.
2 Record the instructions to the turtle	P	Students' written instructions to the turtle, either on the task sheet or a screen capture	Students may need to amend their instructions before writing them down as a set of instructions.
3 Use angles other than 90 or 180 degrees	M	See above	If this is an extension of the Pass task, the turtle path after the first three moves will involve angles such as 60 or 120 degrees.
4 Create a set of instructions involving at least five moves to achieve a specific target	M	See above	For example, the students could program the turtle to move along a route, visiting certain locations and/or avoiding an obstacle.

Getting started

You will need a simple version of control software, such as LOGO. Several freeware versions of LOGO can be obtained via the Internet (e.g. MSW LOGO). You may choose to change the colour and width of the pen, the background and the font size to make it simpler to use for younger students.

Before you introduce the software:

- spend time on activities involving instructions to get a friend from one place to another in the room, perhaps going around obstacles
- develop a set of instructions, perhaps on cards, which students can use to develop sets of instructions for each other
- use board games and floor tiles to convey the notion of spaces and units
- if one is available, let students drive a remote-controlled toy car around a course
- if you have a floor turtle, show students how to give it instructions and then let them try out their own combinations of distance and direction instructions to see the effect

Prior knowledge	New words	
<ul style="list-style-type: none"> • Demonstrate awareness of simple switches • Understand the terms on and off • Understand forward, back, left, right, turn • Count • Estimate distances • Understand quarter, half and full turns 	<ul style="list-style-type: none"> • Sequence • Order • Instruction • Screen/Floor turtle 	<ul style="list-style-type: none"> • Control devices • Commands • Programmable • Start/Stop

Assessment guidelines

You could ask students to draw a route from one named point to another on a simple plan or map. They could then write a set of instructions to make a screen turtle follow the same path. This should include at least one turn of 90 or 180 degrees.

Students will achieve Pass level if they are able to complete up to this point. In order to achieve Merit level, they must successfully complete the second part of the task, which involves drawing a path from the previous end point to another destination on the plan: this should involve at least two more moves, using angles other than 90 or 180 degrees.

If there are two separate tasks for Pass and Merit, then the first three moves of the Merit task would still involve turns of only 90 or 180 degrees.

Starting Searches (4273)

Introduction

In this module students are introduced to searching. They use the Internet and/or CD-ROMs to learn about different ways to access information and they begin to understand how to choose the most appropriate search technique. They understand the difference between menus and indexes and they can recognise and use different kinds of links and buttons.

Learning objectives

Learning objectives	Pass/ Merit	Assessment evidence	Amplification of assessment criteria
1 Use buttons, menus and indexes to search for and navigate to information	P	See below	Students should be able to recognise and use back and forward buttons, hyperlinks, hot spots, indexes or menus to navigate and find information.
2 Use keywords to search for information	P	See below	Students may be provided with the keywords but should be able to follow search results to find the information required.
3 Provide evidence of research undertaken	P	A printout of the answers to a set of questions which can include items to cover LOs 1 to 3	Students demonstrate that they can use search techniques to answer questions. They should complete the searches on specified websites or on a CD-ROM.
4 Select appropriate keywords	M	See below	Students are able to select their own keywords to find answers to specified questions, by searching for information on a CD-ROM or on the Internet. The keywords chosen should enable them to follow an efficient and accurate line of enquiry.
5 Select appropriate results	M	Evidence from the student of the keywords used and the best results of their searches	Students are able to recognise relevant and irrelevant information/links from the results of their searches. They reject the irrelevant information and keep information which is connected to answering their search questions. They should also demonstrate their understanding that not all the information they find accurate and trustworthy.

Getting started

Any sources of digital information can be used for this module, such as CD-ROMs or information websites. Ideally, they could use a combination of many different sources.

However, if/when using the Internet, it might be better to work within a selected website, so that students are not baffled by masses of inappropriate material. You could place links to these sites in a starter page or on the desktop, so that students do not need to have skills with the browser software.

If possible, encourage students to find similarities in the way information is organised and accessed in different media. They should compare using ICT-based searches to a practical search session using reference books. They should also compare organisational aspects in books, such as contents pages, indexes, glossaries etc., with their electronic equivalents.

Searches for this level should have specific results as an end point (like an answer to the question “When was someone born?”). Choose questions that will encourage students to use a range of search techniques, with answers that are easily obtainable from the sources given to the students.

At this level, the students will probably benefit more if the sources are specified. Searching freely on the Internet, or using search engines, is not recommended for this module.

You can link this module with other areas of the curriculum, such as Science, Geography or Literature, because students benefit from having a reason for searching, so providing meaningful and real context is important.

Encourage exploration, experimenting and discussing findings in lessons. Integrate learning from this module into classroom practice as often as possible, so that students relate the experiences to everyday situations. Discuss the reliability of the information found, and encourage discussions to help students begin, in a very simple way, to evaluate the information that they find from various electronic and non-electronic sources.

Prior knowledge	New words
<ul style="list-style-type: none"> • Select icons • Recognise an A–Z index and a contents list in a book • Know how to use book versions of an encyclopedia (or dictionary) • If students use the Internet for this module, a simple explanation of browser software and how to use it would be appropriate 	<ul style="list-style-type: none"> • Search/Search engine • CD-ROM • Menu • Index • Keywords • Hot link/Hot spots • Hyperlinks • Homepage

Assessment guidelines

For this module, all students should be able to search a CD-ROM or website, following a straightforward line of enquiry to find answers to specified questions. They can distinguish between and know how to find information using indexes and menus, and they know how to perform a keyword search. Merit students, however, are able to search more freely and will create their own keywords to affect searches about a topic. They will also be able to recognise and reject irrelevant or inappropriate results of searches, but may keep too many or too much information from the useful results.

To assess this module, you can give students a simple worksheet with some questions to answer from a specified website. You may specify the types of searches, but Merit students will be expected to find information more freely. Evidence for this would be a completed worksheet. For Merit students, ask further questions and expect them to provide both the keywords and the results of their searches, which could be answers to the questions they have been set, or further relevant information about a topic.

Starting Email (4274)

Introduction

In this module, students are introduced to email. The aim is for the students to understand how to use email software to write and send messages, and to collect, read and reply to messages. Students start to experience some of the advantages of email, such as easy and quick communication, and enabling messages to be sent almost immediately over large distances. Students begin to understand the main features of email software.

Learning objectives

Learning objectives	Pass/ Merit	Assessment evidence	Amplification of assessment criteria
1 Create and send email messages	P	You may provide separate printouts for LOs 1 to 3, or one printout which shows an original message, a reply to the student and a further reply from the student.	Students should be able to access the email software and use it to create a new message. They should be able to type in a given email address correctly. They should be able to use the email software to send the message.
2 Reply to email messages	P	See below	Students should be able to use the email software to reply to a message they have received. (This should be achieved by using a reply button rather than re-typing the address.) The subject line will read 'Re:...'
3 Collect and read email messages	P	See below	Students should be able to use the email software to check for new mail. They should be able to identify, access and read new messages. They should be able to understand where to look on the email to find out who sent the mail and what it is about (address and subject lines).
4 Use email folders	M	See below	Students should understand how/where email software stores messages, e.g. the default folders like Inbox, Outbox, Sent folder, Drafts, Trash etc. Students know how/where to find or access stored emails in these folders.
5 Forward email messages and copy to another recipient	M	Printout of email which has been forwarded and copied (This covers LOs 4 and 5 if the message to be forwarded and copied is one they have had to retrieve from, for example, their Sent folder.)	Students can use the email software to forward and send a cc (carbon copy) email to another recipient. They understand the difference between forward, reply and carbon copy.

Getting started

Any email software can be used to complete this module, for example MS Outlook or Outlook Express, or web-based email like Hotmail.

Students are not expected to be able to set up their own email addresses/accounts and, to reduce the work in setting up and managing multiple email addresses, students do not need individual email addresses to complete this module, as long as they have sufficient addresses within a teaching group to be able to send and receive emails. Extra care with the subject line should mean that students can share a single email address successfully.

To help the students to appreciate the advantages of email communication, it would be useful if some messages could be sent over distance (for example, to a school in another district or country). For initial classroom practice it would be ideal if students could be given addresses of others in the same group, so that replies can be received quickly. Students should compare email to other forms of communication – this links to History, in terms of the development of communication technologies, as well as language.

For schools on a network, it may not be obvious to students that an Internet connection is necessary to send and receive email; you might need to mention this, so that students do not assume that every machine will send and receive emails without an Internet connection. Conversely, if students are using a machine with a dial-up connection, they may need your assistance to connect and disconnect, in order to send and receive emails (students' ability to do this is not assessed in this module). Similarly, the login procedure for different email systems often varies in complexity, some requiring username and password identification. As this is not assessed at this level, students can receive your help to access the email software. However, students are expected to understand that they have an email address which identifies their mailbox (even if this is a shared one).

Setting the 'include message in reply' option in the email software may reduce the burden of printing sequences of emails for assessment and moderation.

Students only need a broad understanding of the email software at this level, so keeping the folders to just the default options like Sent, Inbox, Drafts and Deleted Items/Trash, should make it easier to understand.

Safety notes:

Many schools will have an acceptable user policy regarding email/Internet use, and you should explain this to students at an appropriate level of detail before they use email. Similarly, if web-based email is being used, carry out appropriate measures/screening to ensure that unsuitable emails are not accessed by the students. It is also advisable that students copy the teacher into their emails, using this to explain the function of the cc option. This will help the teacher to monitor the students' email use, as well as ensuring that emails being sent are not inappropriate.

Prior knowledge	New words
<ul style="list-style-type: none"> Familiarity with the conventions used to control computer applications, e.g. pointers and icons 	<ul style="list-style-type: none"> Email Email address Connect Inbox/Outbox/Sent items cc (carbon copy) Subject line Online/Offline Send Receive Reply Forward

Assessment guidelines

Both Pass and Merit students need to be able to use email software to write, send, receive, read and reply to messages. This includes understanding the key parts of the email message like To, Subject, Message, From and cc (carbon copy), to copy an email when the address is stored in the Address Book. In addition, Merit students are expected to understand a little more about how the email software stores messages in folders like the Inbox, Sent folder and Trash, so that they can find previously stored messages. Merit students are also expected to be able to cc (carbon copy) and Forward messages to other addresses.

On a more general note, Merit students should be able to complete their emails correctly (including the subject line) and on a first attempt, whereas a Pass student might take more than one attempt to get the email address correct, or might forget to complete the subject line but still send a successful message.

At this level, students do not need to be able to create or manage their own email account, to login with passwords, or to understand how to connect or disconnect a dial-up connection.

Although it is not assessed discretely, there is an underlying expectation that all students know that a computer must be connected in order to send and receive email, and that emails can be sent over any distance in the same timeframe. All students are also expected to understand that an email address identifies where the mail goes but that, unlike written postal addresses where a small error in an address might not stop a letter being delivered, a small error in an email address will result in the mail not being sent/received.

To assess this module, you could give students a task to write and send a simple email to a given address, to ask for some information, like the birthday of the recipient. They should wait for and read the reply. They should then reply in turn, giving their birthday.

Merit students could be asked to find their first message (or another), forward it to another given address and send a cc (carbon copy) to you.

If the 'include message in reply' option has been set in the email software, evidence of the final message in each case (one for Pass and one for Merit) should be sufficient, because this would include/show all the previous messages. This evidence could be in the form of a screen capture, a printout or a saved email file produced by you.

Initial Steps Learning Objectives Record Sheet**Student Name****Students must achieve all Pass Learning Objectives to gain a Pass.****Students must achieve all Pass and Merit Learning Objectives to gain a Merit.***For an explanation of each Learning Objective, please see the Amplification section of the relevant module.***Stage 1**

Student was able to:	Pass/ Merit	Please tick
Starting with Text (4269)		
Enter simple words, using keyboard or other input device	P	
Select and edit text	P	
Select basic icons (e.g. print, save or spellcheck), using the mouse	P	
Name, save and retrieve documents	M	
Use appropriate methods to check text is error free	M	
Date of assessment		

Starting Images (4270)		
Use simple shapes and lines to create pictures or patterns	P	
Edit pictures, using visual effects	P	
Add details to an existing picture, using straight lines or geometric shapes	P	
Add or delete a character or object	M	
Use 'save as' to store edited pictures	M	
Date of assessment		

Starting Graphs (4271)		
Store and classify information	P	
Present information in charts or graphs	P	
Use charts or graphs to answer simple questions	P	
Draw simple conclusions from charts or graphs	M	
Date of assessment		

Stage 2

Starting Control (4272)		
Give a screen turtle a set of instructions to achieve a specified objective	P	
Record the instructions to the turtle	P	
Use angles other than 90 or 180 degrees	M	
Use at least five moves overall	M	
Date of assessment		

Starting Searches (4273)		
Use buttons, menus and indexes to search for and navigate to information	P	
Use keywords to search for information	P	
Provide evidence of research undertaken	P	
Select appropriate keywords	M	
Select appropriate results	M	
Date of assessment		

Starting Email (4274)		
Create and send email messages	P	
Reply to email messages	P	
Collect and read email messages	P	
Use email folders	M	
Forward email messages and copy to another recipient	M	
Date of assessment		

Please sign and date this form when the student has demonstrated through an assessment test that he/she can achieve the Learning Objectives of each module at Pass or Merit level without any additional assistance.

Teacher

Date

Next Steps modules

Exploring Documents (4278)

Introduction

In this module, students begin to expand their word processing skills, so that they are able to add images to documents, change the style, size or colour of text, and begin to understand how to arrange items on the page. They can use the software to refine their work, and they start to understand how they can alter the look of a document to make it appropriate for a particular audience. They know how to save and retrieve their work. They understand how to use the software to improve the accuracy and quality of their work.

Learning objectives

Learning objectives	Pass/ Merit	Assessment evidence	Amplification of assessment criteria
1 Create and amend a text document	P	See below	Students should be able to input a few paragraphs of text, and use the software confidently to make amendments to words or phrases (the work may contain a small number of errors). Students can save and print their document.
2 Amend text for a specific audience	P	See below	Students should be able to change the look of the text, including font style, size and colour, to make it suit a specific audience. The changes they should make can be specified in the assessment.
3 Add images or other objects to a document	P	Printout of document	Students should be able to insert an image (or other object, like a chart) into an appropriate place within a document. They do not need to be able to control how the text wraps around the image, but they should be in control of where the image is placed.
4 Refine and organise the layout of a document for a specific audience	M	See below	Students work on the whole document and re-organise the contents and/or change the formatting, so that it is more suitable for its target audience. The changes they make should not be specified in the assessment, but the content they receive should lend itself to reorganisation and refinement. Students should be able to spot and correct errors.
5 Evaluate a finished document	M	Teacher evidence or printout	Students should be able to evaluate their own work and judge its suitability for a specific audience, for example, whether the layout is clear, or why they have chosen certain options within the document.

Getting started

Any word or text processing software can be used for this module. However, it may be beneficial to choose software which is appropriate to the age and abilities of the students, such as children's text processing software. If using MS Word or the word processor from AppleWorks, it might be useful to change the

toolbar options so that icons such as save and print appear as large buttons, and the menus and toolbars are limited to those the students will need to use. It may also be useful to change the default font to a large and easy-to-read font type, so that students find it easier to link what they are typing with what they see on screen.

Making students aware of the white space left on a page is a good way to start them thinking about page design, and to encourage them to experiment with the layout of items on the page. Showing them how to set the screen view to show a whole page in print view will support this design aspect.

Students will be more likely to appreciate how to make a document appealing to a particular audience if they understand the needs of the audience they are given. For example, they will be able to understand easily how font size and colour could be altered to suit young children, whereas they might find it difficult to know how to make a document look 'professional'. They should begin to discuss the needs of different audiences with you and with each other.

Students should practise producing documents with a different look and feel, and then discuss what sort of things make the document good for different purposes. This will help the students to understand how to create different looks, as well as being able to physically make the changes. Developing these discussions will also help students understand how to evaluate their work.

Prior knowledge	New words	
<ul style="list-style-type: none"> Type simple sentences Use full stops and capital letters Complements and extends 'Starting with Text' 	<ul style="list-style-type: none"> Audience Insert Proofread 	<ul style="list-style-type: none"> Format Save as

Assessment guidelines

Both Pass and Merit students are required to show that they can enter text and use the software to make changes to the text, and to insert images. All students are expected at this level to be able to save, retrieve and print their work. However, in addition to this, Merit students are required to demonstrate that they can refine the way the text and images appear on the page, to make the document more appealing and appropriate for its audience. Merit students should also be able to talk or write about their choices in the way the document looks. For example, "I have made the title bold and centred it, so that it stands out. I think this makes the document easier to read." All students should be able to produce documents which are mostly error free.

For assessment of this module, you could provide students with a piece of text to copy (around 100 words: two or three paragraphs, or a poem with several verses). The paragraphs could be in the wrong order, and there could be a few deliberate errors included, so that students are encouraged to check their work for spelling and other errors. After entering the text, students could be instructed to amend the size, colour and style of the font, so that it is better suited for its audience (the document could be a poem for children, in which case large text and bold colours and an easy-to-read font would be ideal). Students could then be asked to insert an image (or images) from a selection prepared for the document (so that time is not lost during the assessment searching for suitable pictures). The image(s) could relate to a particular part of the text, so that students can demonstrate they are in control of where the image/s is placed. Merit students would need to be assessed further, on being able to refine the way their document looks, rearranging the text and images so that the document looks good and better suits its audience. Merit students should also be able to evaluate their document, for example, being able to talk or write about the choices they have made, and why that makes their document better or worse.

Exploring Images (4279)

Introduction

In this module, students develop their skills in creating and developing pictures and designs, using a variety of graphical tools and saving their outcomes in digital form.

You should give students opportunities to import and edit images from a range of sources – such as clipart, graphics packages, the Internet and, if available, scanners, digital cameras or digital microscopes – and to use these to create their own designs. In doing this, they will be expected to create repeating patterns or effects (such as texture, mosaic and tile) by using stamps and/or copy tools. They will need to use a variety of brush sizes, shapes and effects and to create patterns using the symmetry tool (flip vertically/horizontally, rotate). They will also need to be able to select appropriate areas of an image, then to copy and re-size them.

Learning objectives

Learning objectives	Pass/ Merit	Assessment evidence	Amplification of assessment criteria
1 Create repeating patterns, using stamps and/or copy tools	P	See below	The picture or design should include image/s imported from at least one of the following sources: clipart, Internet, scanned image, digital camera/microscope image or another saved image source. The repeating pattern can be created by using stamps, or by copying images imported into the picture.
2 Create pictures, using a variety of tools and effects	P	Printout of picture or design	Students use at least three different tools, including the symmetry tool, and two different brush sizes/effects.
3 Select appropriate objects, copy and re-size them	M	See below	Students select, copy and resize object/s to add to the design or picture. They save draft versions to show the changes they have made (for LO4).
4 Save drafts showing the development of the design	M	At least two saved and printed versions of the work, showing the development from first to final draft	It will help if students are told to include the phrase 'version1/2/3' or 'first/next/final draft', as appropriate when saving their work.

Getting started

You will need a graphics package with a range of tools and edit features, ideally including symmetry tools and different brush sizes or effects. (The Drawing tools within Microsoft Word would be sufficient for this module.)

You will also need a resource bank of images. These could be from a clipart pack, or images which you have prepared using a scanner or digital camera or microscope, or you could direct students to a suitable source on the Internet. You should include discussion of copyright during this module, to help students develop awareness of their own and people's rights over the images they are using. The important factor here is that students must bring in images from other sources.

If you can also provide a scanner and/or a digital camera or microscope for students to use, this will be a much richer experience for them, but it is not necessary for completion of the module.

Provide a range of stimulus material, such as wrapping paper with repeating patterns, posters and advertisements from magazines. You will also find it helpful to have a pre-prepared bank of suitable images for the students to import. Demonstrate the use of the appropriate new tools and commands, using images from the resource bank, and ask students to use these to create their own designs.

If you have a scanner, provide examples of artwork using scanned images. Demonstrate how to use a scanner, then ask students to use scanned images in their own designs.

If you have a digital camera, demonstrate how to use the camera and how digital images can be imported and edited. Ask students to use an image they have taken with the camera in a simple design. Similarly, a digital microscope can capture interesting images from objects which can be imported and edited.

Prior knowledge	New words	
<ul style="list-style-type: none"> Complements and extends 'Starting Images' 	<ul style="list-style-type: none"> Crop Resize Scale Brush Import <p>If used:</p> <ul style="list-style-type: none"> Scanner Digital camera 	<ul style="list-style-type: none"> Import/Export Scanner Digital camera Horizontal Vertical Digital microscope

Assessment guidelines

You could ask students to create a design for a particular theme such as 'Autumn', 'Sports' or 'Happiness'. This would give them the opportunity to use scanned images (e.g. leaves for 'Autumn', clipart or digital photos for 'Sports').

The examples you provide for students to discuss and work on during the module are very important in preparing them for assessment. Choose a title or theme which will not only allow students opportunities to use rotations or reflections as part of their design, but will also encourage it. You can help by giving them a wide variety of sample material illustrating the use of relevant tools and techniques, and by including discussion of the work of artists and designers which particularly demonstrate creative use of image and pattern.

Exploring Spreadsheets (4280)

Introduction

In this module, students are introduced to spreadsheet software. They learn to enter data, text and formulas into cells. They can copy data, replicate formulas and they understand that spreadsheets carry out calculations automatically. They can use spreadsheet software to create graphs or charts. They begin to understand the power of spreadsheets for modelling situations, and how data and formulas can be modified to test out predictions, or to work out what happens when something is changed.

Learning objectives

Learning objectives	Pass/ Merit	Assessment evidence	Amplification of assessment criteria
1 Enter labels and numbers into a spreadsheet	P	See below	Students should be able to enter text and data into spreadsheet software to create a working spreadsheet. This can be a copy of a spreadsheet supplied by you to which students are asked to add items.
2 Enter and copy simple formulas	P	See below	Students should be able to enter simple formulas like =A1+A2. They should be able to use the SUM function to total a range of cells. (N.B. This should involve creating the SUM function and not just using AutoSum from the toolbar.) They should be able to copy a formula to another location. The assessment may prescribe which formulas to put where.
3 Create a graph	P	Printout(s) of completed spreadsheet with graph and formulas displayed	Students can select a given range of data and use it to create an appropriate graph. Students give the graph a meaningful title, but the axes may not be labelled or referenced correctly.
4 Modify data	M	See below	Students are given some data to change in their spreadsheet (which will affect both data and formulas). Students manage to change the data and make appropriate checks to make sure that their spreadsheet still works.
5 Use a spreadsheet to answer a modelled scenario ('what if')	M	Printout of the student's answer to the modelled scenario and the modified spreadsheet	<p>Students need to demonstrate an understanding of the effect of changing data and should be able to answer questions to modelled scenarios, such as "If the cost goes up by... ...would there still be a profit?"</p> <p>LO4 is about the student being able to make the changes, while LO5 is about the student's understanding of the implications of those changes, for example using the ability to change or modify a spreadsheet to answer questions.</p>

Getting started

Any spreadsheet software can be used to deliver this module, including MS Excel or the spreadsheet from AppleWorks.

Students will need to understand the layout and features of a spreadsheet, and how to move around and enter text and data into cells. You may give students partially prepared spreadsheets.

As a matter of good practice, encourage students to use titles/labels to describe the data in the rows and columns of the spreadsheet. It may help students initially if they practise moving round the spreadsheet and colouring certain cells to make a flag pattern. This will support their use of correct cell references and emphasise the difference between word processors and spreadsheets.

Students will benefit from practising on spreadsheets which have a meaningful context. It is advisable to explain fully what information a spreadsheet displays, as this is not always obvious to a student. Encouraging students to discuss with each other what a particular formula is doing will help them to understand the spreadsheet they are creating.

Students may need some extra support when creating formulas. They may also benefit from understanding how formulas change when they are copied to a new location. Show students the 'show formulas option' to assist in checking formulas.

You can link this module with other subjects like Mathematics where, for example, spreadsheets can be used for solving formulas by trial and error. Students could link this to learning multiplication tables and exploring number patterns in Mathematics.

You should encourage students to test their spreadsheets and check their formulas.

Prior knowledge	New words	
<ul style="list-style-type: none"> • Basic mathematical knowledge for formulas • Ability to copy and paste • Ability to use the keyboard to enter text and data efficiently • Ability to retrieve stored work • Complements and extends 'Starting Graphs' 	<ul style="list-style-type: none"> • Spreadsheet • Cell • Formulas • Sum • Calculate • Rows 	<ul style="list-style-type: none"> • Columns • Replicate • Data • Model • 'What if' * • Total • Function
	<p>* This does not refer to the IF Function</p>	

Assessment guidelines

Both Pass and Merit students should be able to enter text, data and simple formulas into cells, to complete a spreadsheet with a good level of accuracy. They can copy data and formulas to new locations. They should understand what the spreadsheet shows and be able to produce a graph or chart of a selected range of data. In addition, Merit students should be able to modify both data and formulas to change what the spreadsheet shows. They should be able to modify the spreadsheet to answer questions of the type “What if...?”, for example, “What if 10 more people go on the trip, how much will the new total be?”. Merit students are expected to be more aware of the accuracy of their spreadsheet, and will check for errors or ask for help to correct them.

For assessment of this module, you may provide students with a partially completed spreadsheet for a real-life situation, such as the items and costs of food and drinks for a class party. Students enter the remaining data and formulas to complete the spreadsheet. They produce a graph which shows some information from the spreadsheet. Merit students may be asked to predict the effects of changing one aspect of the spreadsheet, and then test out their prediction. Evidence can be in the form of screen captures or printouts of the completed spreadsheets (one for Pass level and a further one showing changes made for Merit would be sufficient).

Exploring Databases (4281)

Introduction

Students will already have carried out searches for information for their work in the Initial Steps module 'Starting Searches'. In this module, students will learn about the usefulness and basic structure of databases, how to enter and edit data in databases, and how to use them to search for and sort information. They should also discuss which questions a selected database would help them to answer, and which it would not. This will help them consider the design of database structures.

In working on this module, students ought to have experience of the kinds of data entry they will meet in the real world, i.e. 'forced choice', using button selection or drop-down menus, as well as 'open' entry, where any text or numeric field values may be keyed in. (In using Internet-based databases to find information, students will encounter such 'drop-down' menus, as well as being asked to provide key words or phrases. Experience of varied forms of data entry will also help students who progress to designing databases in the On Track module 'Databases for a Purpose'.) It is important to consider Internet safety when using Internet databases.

Real databases may contain a lot of information and, although it is not assessed specifically in this module, students should be shown how bar charts and pie charts can help us to understand some of the key features or patterns in this information more effectively than looking at lists of values.

Learning objectives

Learning objectives	Pass/ Merit	Assessment evidence	Amplification of assessment criteria
1 Add new records to a data file	P	Printout of additional records, with errors identified by the teacher	Students can enter numeric and text data into a database with a predetermined structure, making no more than three errors in entering five additional records.
2 Identify field types	P	Written answers by student	Students can identify at least two different field types in the database.
3 Use 'equals', 'more than' and 'less than' in searches	P	Written answers by student	In order for this to be feasible, in a database of twenty records, the result of such a search should be no more than three records for a question of the type "Which characters have height greater than x metres?".
4 Re-phrase a given question in terms of search criteria	M	Printout or screen capture of search criteria used	Students answer a real-life question from their databases by turning their questions into suitable database search criteria.
5 Interpret data	M	Copy of question and student's answer to it	Students should give a written description of the results of sorting and searching data in response to a question. The answer is likely to be one or two sentences, plus a short list giving relevant values, if appropriate.

Getting started

You will need a database package with a range of tools and edit features.

You will also need to provide a prepared database, ready for students to add files and edit records.

In this age group, many students are interested in electronic games and card collecting, and both these kinds of activity involve information about various key features or qualities of characters. Suitable collections of cards could provide an interesting starting point, allowing students to use 'real objects' (i.e. the cards) to look at grouping, sorting, and classifying before they move on to a database. They will also begin to realise how much easier it is to find information when it is organised by agreed features (i.e. fields and field values).

Alternatively, you could get the class to add to a database about their hobbies or favourite books, about the performance of sports teams, or one based on the characters of a popular story or television series.

It is important for students to have readily accessible sources of information to complete the database, and for them to find the subject matter interesting, so that entering data does not become a chore.

For students to be able to turn real-life questions into search criteria for retrieving information from a database, they will benefit from practice and from seeing examples of how real-life databases are used. For example, how does the school librarian find out whether a book is loaned out or who has borrowed it?

Prior knowledge	New words	
<ul style="list-style-type: none"> Search using keywords 	<ul style="list-style-type: none"> Database Field Record File Sort Order 	<ul style="list-style-type: none"> Query INCLUDES AND OR NOT Subset

Assessment guidelines

Students use their skills in entering data in the correct field, searching and presenting information. They will work with a minimum of six field names. Some of these fields could have yes/no values; some could have up to six pre-set values. The data will be suitable to ask a range of questions, so that they can generate sufficient evidence for all the Learning Objectives.

Some database packages make it easy to view and enter all the information in a table format (like a spreadsheet), rather than using a data entry (record card) layout for each record. The database for students to use in the assessment of search skills will be large enough to ensure that students would be unlikely to identify all relevant records/field values simply by looking at all the records, without carrying out appropriate sort or search commands first.

All students are expected to be able to recognise different field types, enter new records and search for specific information from within the database. In addition to this, Merit students are expected to be able to answer real-life questions from a database by turning these into suitable search criteria and interpreting the results they retrieve.

Most of the student's effort in carrying out the task will be in formulating appropriate search criteria, rather than writing down (or printing out) lengthy reports on the results of searches.

Exploring Control (4282)

Introduction

This module builds on the Initial Steps module 'Starting Control'. In this module, students will use the programming language LOGO to control a screen turtle. They will write simple instructions and sets of procedures, using standard commands and the repeat function.

In working on this module, students have the opportunity to develop both ICT and mathematical concepts. They should begin to see how simple sets of instructions can be combined to produce outcomes such as shapes, or even simple pictures. They will have the experience of 'teaching' the computer new words (i.e. the procedures) defined by the students themselves.

Learning objectives

Learning objectives	Pass/ Merit	Assessment evidence	Amplification of assessment criteria
1 Write a list of commands to produce a simple picture or design	P	See below	Students should create the design (for example, a flower pattern) by creating a simple shape and rotating it. They should be able to write accurate instructions to create the basic shape and to duplicate it to form the pattern.
2 Use repeat commands	P	See below	
3 Create complex shapes with varied angles	M	See below	The instructions should also include varied angles (for example, a pattern of up to three triangles repeated to form the corners of a square).
4 Name and run a procedure	M	Printout of the student's instructions and finished shape will provide evidence of all four learning objectives (LO1–LO4)	

Getting started

You will need LOGO software which includes the commands 'clear', 'penup', 'pendown', allows a turtle to rotate 360 degrees and allows the results to be printed out.

If resources allow, a floor turtle is also useful, but students could also 'play turtle' (develop a set of instructions for a partner to achieve a certain objective, for example, draw a circle, then ask a partner to be the turtle and carry out the instructions). The partners could then assess the effectiveness of the instruction set. You will also need to provide worksheets of sequences, graph paper and set squares/protractors for students to try out ideas on paper. Give students experience of writing instructions for people or floor turtles and drawing simple shapes on paper before they attempt similar shapes/instructions on screen.

You will need to teach students how to clear the screen and to use the penup/pendown commands before they can draw some letters or shapes.

Give plenty of opportunities for students to see how changing numbers in the commands affects the final path of the screen turtle. Provide a worksheet with simple repeat sequences and ask the students to predict what shapes they will produce. Set simple challenges such as 'draw a square, then draw a smaller square next to it'. Ensure students can build a repeat command with the correct form of brackets to create a simple shape (square, pentagon, hexagon, etc.).

Merit students will also need to learn how to use repeats and the correct form of brackets before learning how to create a procedure.

Prior knowledge	New words
<ul style="list-style-type: none"> Complements and extends 'Starting Control' Know that degrees measure turns and that 90, 180 and 360 degrees are one quarter, half and full turns respectively 	<ul style="list-style-type: none"> Procedure Repeat Penup Pendown Clear

Assessment guidelines

Both Pass and Merit students need to show that they are able to write instructions and produce simple shapes in LOGO. All students also need to be able to use the repeat command.

In addition to this, Merit students need to be able to use a wider variety of instructions, like varied angles combined with repeats to create more complex shapes. Merit students are also expected to be able to write and use simple procedures.

Exploring the Internet (4283)

Introduction

In this module students build on their searching skills, so that they are able to make use of the Internet for information gathering. They also learn how to use standard features of browser software in order to help collect, store and retrieve information. Students should be able to recognise links and navigation options on a web page, and be able to use them to find the information they need. The aim is to give students sufficient skills to be able to use the Internet safely and efficiently for simple information gathering. Students should start to identify by themselves which search results are useful and which should be rejected.

Learning objectives

Learning objectives	Pass/ Merit	Assessment evidence	Amplification of assessment criteria
1 Use Internet tools to find information	P	See below	Students are able to use a web browser and one or more search engines to retrieve information. They should be able to filter information, for example by country, and refine their searches to find relevant material.
2 Evaluate relevance and usefulness of material	P	See below	Students are able to check information to ensure it is relevant and useful, discarding any other information – but they may keep more useful information than they need.
3 Store and retrieve information	P	See below	Students are able to use a variety of means to store information they have found for future use. <ul style="list-style-type: none"> • They are able to save a web page and view it later. • They are able to use the browser software to print a web page. • They are able to bookmark a site and view it later.
4 Copy and paste information from a website	P	A completed question sheet from the student or a printed copy of student research, annotated by the teacher, to provide evidence for all criteria	Students are able to use the browser software to select, copy and paste useful text into another software package or document.
5 Save URLs and objects from a website	M	See below	Students are able to use copy/paste to copy URLs into another document or email. Students are able to save single objects like images from a web page, for their own use.

6 Use extended search skills	M	Students create a short document or email, including two or three of the best results of their search, a copied link and an image. Evidence could be a printed copy of this document or saved email file.	Students are able to work independently, using the practical skills they have acquired to gather simple useful information about a topic. They are able to present their findings in another document. The findings at this level should be relevant, but not necessarily organised or reworded.
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Getting started

Any browser software can be used for this module, and student machines will also need to have connection to the Internet. A text application of some sort, like Notepad or Word, is also required so that students can copy and paste their search results into a document.

Students should understand how the Internet functions, so that they can appreciate things like how URLs work as addresses, and why some information may not be useful or trustworthy. You should also teach them about issues relating to Internet safety and copyright.

Copyright issues:

This will vary from country to country, but you should make students aware, at an appropriate level of detail, of any ruling which may affect what they are able to copy and how they can use it. Also, encourage students not to plagiarise whole portions of text which they have gathered from the Internet, but to rephrase the information in their own words.

Safety notes:

Many schools will have an acceptable user policy regarding Internet use and students should have this explained, at an appropriate level of detail, before using the Internet. Similarly, appropriate screening/ filtering should take place to ensure that students do not access unsuitable sites.

Today, it is very important that students understand how to keep themselves safe when using the Internet. Our students come from different cultures, backgrounds and from a wide range of age-groups. Teachers will know best which aspects of this subject are relevant and appropriate to be included within their curriculum. However, teachers may like to view this website: <http://www.thinkuknow.co.uk> and use it as a teaching resource or with their students, if they think it is suitable.

For schools on a network, it may not be obvious to students that an Internet connection is active when they are using the Internet. You might need to mention this, so that students do not assume that every machine will be able to connect to the Internet automatically. Conversely, if students are using a machine with a dial-up connection, they may need your assistance to connect and disconnect in order to work on the Internet (students' ability to do this is not assessed in this module).

This module may be linked with other areas of the curriculum such as Science, Geography or Literature, because students benefit from having a reason for searching, so providing meaningful and real context is important.

Search engines can be difficult to use if a topic or question is ambiguous or has several different interpretations – 'surfing' can mean either surfing a web page or surfing on a surfboard! Take care, therefore, with research topics so that students do not have to sift through too many irrelevant items before they find good information. You could try out various ideas first and see which topics produce fairly

simple lines of enquiry from the search engine they will be using. Students are not being assessed on their ability to generate their own lines of enquiry, so the questions and research topics should not be too open-ended. Students need to be clear about the information they are looking for. It is their ability to find and use relevant information which is more important at this level. However, you should encourage exploration, experimentation and the discussion of findings in lessons.

Prior knowledge	New words	
<ul style="list-style-type: none"> • Copy and paste • Recognise and use navigation options on web pages, like hyperlinks • Complements and extends 'Starting Searches' 	<ul style="list-style-type: none"> • Search Engine • Internet • www • URL 	<ul style="list-style-type: none"> • Bookmark • FAQ • Copyright

Assessment guidelines

Both Pass and Merit students are required to show that they can use browser software and navigation options on web pages to view information on the Internet. They should also be able to use the browser software to store, retrieve, bookmark and print useful pages for future use. They should understand that printing out a whole site is frequently a less productive approach to finding information. They should also be able to copy and paste selected portions of text into another document. Students should be able to experiment with keywords when using a search engine to find information, and should also be able to spot useless information and reject it. However, they may keep more information than they need.

Merit students are able to work independently to collate results of a search in a separate document. They have the beginnings of an organised method of working, but may have too much information, and it may not be reworded or fully organised. Merit students are also expected to be able to copy links from web pages, and to save objects like images for their own use.

Assessment of this module might include a general research topic, like volcanoes, as the theme. You could assess skills in LO1 by asking the students to answer questions from a link to a specific website on volcanoes. A further question could provide evidence for LO2, and the results could be saved, bookmarked or printed, with a small excerpt of text being copied to another document.

The assessment could be quite open, in which case you might have to validate that all the Learning Objectives have been satisfied, or the questions can be quite prescriptive to cover each skill. For example, requiring a particular website to be bookmarked, in which case the student's completed answer sheet would provide all the evidence required (as long as all the objectives were covered).

For Merit students, a further task requiring the students to collect some extra information on the topic and also find a picture would be necessary. Students would be expected to copy/paste the best results of their search and the image into another document, and this would provide the evidence for LO5 and LO6.

Exploring Email (4284)

Introduction

In this module, students become more familiar with email. They learn how to extend the use of email by sending and receiving attachments. They also learn more about the email software by learning how to use the address book and to manage folders to store emails. At this level, students should be able to recognise the difference between web-based and ISP-hosted email, and feel confident to send and receive emails using either.

Learning objectives

Learning objectives	Pass/ Merit	Assessment evidence	Amplification of assessment criteria
1 Compose, edit, read and respond to emails	P	See below	Students can access their own email account and use the email software to compose, send, read and reply to messages. They know their own email address. They complete the subject line of the email when composing a new message. They can use the text tools in the email software, like copy, paste, delete, and spellchecker (if appropriate), to edit or refine their messages.
2 Add addresses to the Address Book	P	Printout or screenshot of Address Book showing new addresses	Students can add new email addresses to their Address Book.
3 Use the Address Book to send copies, blind copies and forward emails	P	See below	Students understand the difference between cc, bc and Forward and how to use these. They use the Address Book to send copies and forward emails to addresses in their Address Book. (They can use the new address/es they have added in LO2.)
4 View an attachment	P	Printout of attachment as evidence of having been able to view it successfully, or content of email reply will verify that attachment has been viewed	Students demonstrate that they can view an attachment which they receive with an email. This could be a text document, an image or other popular file format. You could ask the student to reply to the mail answering something about the contents of the attachment as evidence of having viewed it.
5 Add an attachment to an email	M	Evidence of attachment could be in a printout of an email showing attached file or icon in the header	Students attach an image or document file to an email. The students do not need to have created the file, but should know where it is located and be able to navigate to it without help. The file should be an appropriate size for sending on slow connections.

6 Manage email folders	M	Screen shots showing new folder and contents	Students create and name a new folder, and move the email they have sent for LO5 into this folder. At this level, moving mail between folders will be manual – students are not expected to set up mail rules.
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Getting started

Any email software can be used to complete this module, for example MS Outlook or Outlook Express, or web-based email like Hotmail. However, the software needs to have a simple Address Book facility.

Ideally, each student should have their own email address/account to complete this module. However, students are not expected to be able to set up their own email addresses/accounts.

In order for the students to appreciate the advantages of email communication, it would be useful if some messages could be sent over distance (for example, to a school in another district or country) and, for initial classroom practice, it would be ideal if students could be given addresses of others in the same group, so that replies can be received quickly. You should introduce students to the concept of attachments, and encourage them to send attachments with their emails. Students should be able to open attachments in emails sent to them.

For schools on a network, it may not be obvious to students that an Internet connection is necessary to send and receive email. You might need to mention this, so that students do not assume that every machine will send and receive email without an Internet connection. Conversely, if students are using a machine with a dial-up connection, they may need your assistance to connect and disconnect in order to send and receive emails (students' ability to do this is not assessed in this module). However, students are expected to be able to complete any login procedure by themselves.

Setting the 'include message in reply' option in the email software may reduce the burden of printing sequences of emails for assessment and moderation.

At this level, all students should understand the two main possibilities for email (ISP-hosted and web-based) and, if possible, you should give students experience of, or information about, both.

Safety notes:

Many schools will have an acceptable user policy regarding email/Internet use, and you should explain this to students, at an appropriate level of detail, before using email. Similarly, if web-based email is being used, carry out appropriate measures/screening to ensure that students do not access unsuitable emails.

Prior knowledge	New words	
<ul style="list-style-type: none"> Understand that email is a component part of the Internet Complements and extends 'Starting Email' 	<ul style="list-style-type: none"> Web mail ISP Hosted mail Mailbox Attachment 	<ul style="list-style-type: none"> Folder Online/Offline Address Book bc (blind copy)

Assessment guidelines

Both Pass and Merit students need to be able to use email software to write, send, receive, read, reply to, cc and forward email messages. This includes understanding the key parts of the email message like To, Subject, Message and From. They should also be able to use the text tools in the email software to edit and refine their emails. They are expected to understand where/how the email software stores messages in folders like the Inbox, Sent folder and Trash, so that they can find previously stored messages. All students should also be able to add an address to their Address Book, and open an attachment they receive with an email. In addition to this, Merit students should be able to add an attachment. They should also start to understand how to manage their mailbox, by being able to create new folders and move mail into them.

On a more general note, Merit students would be expected to work independently to complete their emails correctly (including the subject line) and use the text tools to refine their messages. A Pass student should know how to use these tools, but may be unable to spot errors or refinements.

At this level, it is not expected that any students are able to create their own email accounts, but they are expected to be able to login with passwords, if necessary.

Although it is not assessed discretely, there is an underlying expectation that all students would know that a computer needs to be connected to send and receive email, and that emails can be sent over any distance in the same time-frame. All students are also expected to understand that an email address identifies where the mail goes but, unlike written postal addresses where a small error in an address might not stop a letter being delivered, a small error in an email address will result in the mail not being sent/received.

To assess this module, you could give students a task to write and send a simple email to a given address, asking a survey question like how long it takes the recipient to get to school. They read the reply and add the address of the sender to their Address Book. They can then forward and cc this email to other members of the group and send a bc to you. A message from you could then include a graph of another similar survey, and they could use all this information to produce a summary email, with an attachment of further information which they could send to you.

You could ask Merit students to de-attach the graph when they reply, and attach some different information (for example, a further graph or summary document) to an email. They could then create a new folder in Sent items called Work, and move the message into it.

If the 'include message in reply' option has been set in the email software, evidence of the final message in each case should be sufficient, because this would include/show all the previous messages. This evidence could be in the form of a screen capture, printout or a saved email file produced by you. For Merit students to show that they have achieved LO5 and LO6, a screen capture of the new folder and its contents (showing an attachment) would be sufficient.

Exploring Multimedia (4285)

Introduction

This module aims to introduce students to multimedia authoring software. The aim is to produce a short presentation for a specific audience, recognising the need for good page design and clarity.

The presentation should cover a particular theme, and should contain both text and images. It should be intended for access by individuals who will navigate through the slides at their own speed and be offered choices throughout, via hotspots or buttons.

Learning objectives

Learning objectives	Pass/ Merit	Assessment evidence	Amplification of assessment criteria
1 Create a page of text, images and sounds which are activated by appropriately named and positioned buttons	P	See below	Ensure that any buttons or text which are used for navigation, or to open files or activate sounds, are clearly marked on the printout. If it is not possible to tell from the printout what an object is doing, then the student will need to write this on the printout, next to the objects.
2 Use effective page design	P	See below	Avoid overcrowding of text; employ suitable fonts, text size and position for purpose; choose readable combination of text and background colour.
3 Organise screens and identify appropriate choices and links	P	Final printout of slides	The student is able to link at least three slides in an organised way.
4 Create pages which offer the user options	M	See above	There should be a choice of routes through the presentation, not simply a linear one.
5 Demonstrate how the presentation meets the needs of the intended audience	M	Teacher evidence or printout	Students must be able to identify at least two elements of the presentation (content, language, layout, colour, style etc.) which address a particular need.

Getting started

The most common software package for this module would be Microsoft PowerPoint, although presentation software from AppleWorks or educational software versions are also suitable.

You may also want to encourage students to use some of the following if they are available, but they are not essential:

- Microphone
- Scanner
- Digital camera or microscope
- Internet

You will need to gather a collection of images from the Internet, clipart, scanner etc. The emphasis of this module is on using text, images and sounds in a presentation, rather than on gathering those resources.

It would be useful to look at some sample presentations and discuss how a user might navigate through them. Students should consider different page layout/design. Draw attention to how changing the font and text size can change the effect of text. What colour combinations of text and background work well?

Introduce the use of storyboarding, and get students to plan out in rough form what they are going to do before they open the multimedia application. It may be helpful to use a separate card/sheet of paper for each page or screen, so that they can physically change the order, or change the content of a page.

Encourage students to check that their hyperlinks and buttons work as intended. It is easier to get this stage right if students leave it until the later stages of constructing the presentation (students should decide the final version of links and routes through the presentation before they insert hyperlinks).

Students will find the idea of adapting their presentation to a particular audience easier if:

- they have spent time discussing in class how/what features in sample presentations made them particularly suitable for their purpose and their audience
- the target audience is familiar to them, for example parents, other children

Prior knowledge	New words	
<ul style="list-style-type: none"> • Writing for an audience • General word processing and page design skills • Image manipulation 	<ul style="list-style-type: none"> • Interactive • Non-linear • Hot spot/Hyperlink 	<ul style="list-style-type: none"> • Hypertext • Navigation • Storyboarding

Assessment guidelines

You could ask students to create a presentation for a particular audience (for example, parents at an Open Evening, or a younger child) on a theme (for example, Ancient Egypt). The number of slides they can use would be limited and they should use a similar colour scheme throughout. The students will use a resource bank of pictures, sound and text files, which they can select from and use in their presentation. Students should not have to search elsewhere during the Assessment activity.

At Pass level, students should be able to produce three linked slides with text, images and sound. At this level they should also be able to arrange the items well on the page, and be able to link the pages in an organised, if simple, way.

At Merit level, students should include links which allow the user to choose their route through the presentation, rather than simply going on to the next slide. Students at Merit level should be able to give a written or spoken description, identifying at least two things they have modified to meet the needs of the audience better.

Next Steps Learning Objectives Record Sheet

Student Name

Students must achieve *all* Pass Learning Objectives to gain a Pass.

Students must achieve *all* Pass *and* Merit Learning Objectives to gain a Merit.

For an explanation of each Learning Objective, please see the Amplification section of the relevant module.

Stage 1

Student was able to:	Pass/ Merit	Please tick
Exploring Documents (4278)		
Create and amend a text document	P	
Amend text for a specific audience	P	
Add images or other objects to a document	P	
Refine and organise the layout of a document for a specific audience	M	
Evaluate a finished document	M	
Date of assessment		

Exploring Images (4279)		
Create repeating patterns using stamps and/or copy tools	P	
Create pictures using a variety of tools and effects	P	
Select appropriate objects, copy and re-size them	M	
Save drafts showing the development of the design	M	
Date of assessment		

Exploring Spreadsheets (4280)		
Enter labels and numbers into a spreadsheet	P	
Enter and copy simple formulas	P	
Create a graph	P	
Modify data	M	
Use a spreadsheet to answer a modelled scenario ('What if...?')	M	
Date of assessment		

Exploring Databases (4281)		
Add new records to a data file	P	
Identify field types	P	
Use 'equals', 'more than' and 'less than' in searches	P	
Re-phrase a given question in terms of search criteria	M	
Interpret data	M	
Date of assessment		

Stage 2

Exploring Control (4282)		
Write a list of commands to produce a simple picture or design	P	
Use repeat commands	P	
Create complex shapes with varied angles	M	
Name and run a procedure	M	
Date of assessment		

Exploring the Internet (4283)		
Use Internet tools to find information	P	
Evaluate relevance and usefulness of material	P	
Store and retrieve information	P	
Copy and paste information from a website	P	
Save URLs and objects from a website	M	
Use extended search skills	M	
Date of assessment		

Exploring Email (4284)		
Compose, edit, read and respond to emails	P	
Add addresses to the Address Book	P	
Use the Address Book to send copies, blind copies and forward emails	P	
View an attachment	P	
Add an attachment to an email	M	
Manage email folders	M	
Date of assessment		

Exploring Multimedia (4285)		
Create a page of text, images and sounds which are activated by appropriately named and positioned buttons	P	
Use effective page design	P	
Organise screens and identify appropriate choices and links	P	
Create pages which offer the user options	M	
Demonstrate how the presentation meets the needs of the intended audience	M	
Date of assessment		

Please sign and date this form when the student has demonstrated through an assessment test that he/she can achieve the Learning Objectives of each module at Pass or Merit level without any additional assistance.

Teacher

Date

On Track modules

Documents for a Purpose (4289)

Introduction

In this module, students expand their word processing skills and build on skills developed in 'Exploring Documents', so that they can create documents for many purposes. They are able to use the software to change the look of the text, add tables and amend the page layout, including the way images are displayed in the document. They also learn how to make changes to the document as a whole, including adjusting margins, adding page numbering, or adjusting whether the page appears in landscape or portrait layout. They understand how to use the word processing software to edit a document to make it more suitable for its purpose.

Learning objectives

Learning objectives	Pass/ Merit	Assessment evidence	Amplification of assessment criteria
1 Create and format text which is suitable for a particular purpose	P	See below	Students can apply a range of formatting options, such as bold, italic and underline, as well as being able to amend font type and colour, to highlight key points or titles within the text and make the document suitable for its purpose. Students should also demonstrate an ability to change the look of text/passages within a document, to make it more appropriate for its meaning.
2 Adjust properties to allow graphics or other objects to fit well within the document	P	See below	Students can use text wrap, image/object size, cropping or positioning options, so that images or other objects are placed appropriately in the document. Students should demonstrate an ability to be in control of how objects look and are how they are placed within the text.
3 Insert table into document	P	Students produce a printout of their document which shows how they have used tables, graphics and formatting on the text to make it appropriate for its purpose	Students insert a table within the document.
4 Use advanced formatting features	M	See below	Students use bullet points, numbering, lists or tabs to add extra definition to their document.
5 Use page formatting options	M	Students produce a printout of their document which shows how they have used tables and graphics, and have formatted the page and the text to make it appropriate for its purpose	Students are able to change page layout (portrait to landscape or adjust margins) and add page numbers or other items to the header or footer of the document.

6 Adjust page formatting for a specific audience	M	Teacher evidence or printout	Students are able to justify (at least verbally, if not in writing) the choices they have made when formatting their document to make it appealing to its target audience.
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Getting started

Any word or text processing software can be used for this module, for example Microsoft Word or the word processor from AppleWorks. You will need appropriate images for the students to insert into their documents. These may be from CD-ROM, clipart file, or the Internet or created for the purpose by use of a scanner or digital camera or microscope. A colour printer would be useful to print final documents, but it is not essential. Include discussion on intellectual property and copyright at this point.

Making students aware of the white space left on a page is a good way to get students thinking about page design, and to encourage students to experiment with the layout of items on the page. Experimenting with the effect of different wrapping options on images is a good way to learn how to manage the white space more effectively. Using whole page print view will enable students to have a clearer idea of the layout of their pages.

Students will be more likely to appreciate how to make a document appealing to a particular audience if they understand the needs of the audience they are given. For example, they will be able to understand easily how font size and colour could be altered to suit young children, whereas they might find it difficult to know how to make a document look 'professional'. Although the student does not need to write the text, it can be useful to discuss how text is worded and detail is varied for different audiences. They should appreciate that text content, together with the formatting options which they can apply, make a document appeal to its intended audience. Looking at different styles of books is a good way to compare and contrast the different techniques, and it also encourages the students to think about the different audience types.

Students should practise creating a variety of documents which benefit from different page layouts and different text arrangements, like bulleted lists or tables (for example, instruction sheets, menus or programmes for events). This will help them to understand the benefit of the new features they are learning. Also, writing and printing longer documents will help the students to realise the benefits of features like page numbering, or adding their name to the header or footer of a document.

Practising producing documents with a different look and feel, then discussing what sort of things make the document appropriate for different purposes, will help the students to understand how to create different looks, as well as being able to physically make the changes. Developing these discussions will also help students to understand how to evaluate their work.

When working with images and tables in a document, it is useful to get the students to ensure that text flow (wrapping) around an object is a property of the object, not the text, and that different objects can be treated in different ways, depending on what they want to achieve.

When working with longer documents, it may be useful to produce an unformatted text file for the students to start from, containing the majority of text for amendment as necessary.

Prior knowledge	New words	
<ul style="list-style-type: none"> Complements and extends 'Exploring Documents' 	<ul style="list-style-type: none"> Line spacing Margins – left, right, top and bottom Text wrap Justify text Align left/right/centre Lists 	<ul style="list-style-type: none"> Re-size/Scale Crop Table Page setup Header/Footer Bullets Tab

Assessment guidelines

Both Pass and Merit students will need to be able to produce a document which contains both image and table objects. They need to be able to demonstrate that they are in control of the placement within the document of these objects and the text. They should also be aware of the text wrapping options for objects, so that they are able to make choices about how objects and text appear within the document. All students should be able to produce a document which is suitable for its purpose, and should be able to edit the document, proof read or use the spellchecker to produce a document which is mostly error free.

In addition, Merit students should be able to add further formatting to the text, such as bullet points or numbered lists. They should also be able to demonstrate an ability to apply changes to the whole document, such as altering page orientation, margin size, or adding a header/footer and page numbering. Overall, a Merit student should be able to use the word processing software confidently, to produce documents which show an awareness of how information is placed within a document and how this can make a document better suited for its purpose. Merit students should be able to use the software to experiment freely with the look of a document, to make it better suited to its purpose.

To assess this module, the students could create an information page, for example, about a country or favourite animal. The main content of the text could be saved and given to them as an unformatted text file to copy and paste into their document. Alternatively, it could be a piece of text which they have produced in a different subject area, and which they now need to improve. The text will require some changes and additions to be made to it, so that the students show they can proof read, spellcheck, add and edit text well. You could then ask students to add an image (you would provide this) and insert a table. (The table could, for example, be details of population and climate for the country, or height, length, weight and speed characteristics of the animal). Pass students would then need to amend the look of the text, and the arrangement of the objects and text within the document, to make it suitable for its purpose (for example, a reference sheet for other students). You should word the assessment or set it up in such a way that text-wrapping options are required for either the table or the image.

You could then give Merit students some additional information (for example, about a second country or animal) to include in their document. You could also ask them to create a summary sentence at the beginning of the document, with either a numbered or bulleted list stating which countries or animals are included. You should also ask them to change the page orientation (to landscape) and arrange the information so that it suits this layout better. You could also ask them to include page numbers and/or their name in either the header or footer of the document. Merit students should be able to write about their work, and to explain how the choices they made when creating their document make it suitable for its purpose.

Multimedia for a Purpose (4290)

Introduction

This module builds on work in Next Steps module 'Exploring Multimedia', using multimedia authoring software. The aim is to create an automated presentation for a target audience, incorporating transition and simple animation.

Whilst working on this module, you should encourage students to find or create appropriate resources, and to consider appropriate use of transitions and timings. They should consider how well the presentation fits its purpose and the needs of the target audience.

Learning objectives

Learning objectives	Pass/ Merit	Assessment evidence	Amplification of assessment criteria
1 Create a plan for a presentation	P	See below	The order in which the slides will be viewed should be clear from the printout.
2 Recognise and select appropriate source materials	P	See below	Students select materials which are relevant, and which demonstrate some awareness of the needs of the target audience.
3 Incorporate transition and animation	P	See below	Students should include information on effects they used as annotations of the relevant slide.
4 Incorporate timings, audio and 'build' effects	M	Final printout of slides, plus written comments on effects used	This is best presented as a 'script' for each slide, clearly identifying when each effect begins, what it is and how long it lasts.
5 Demonstrate a clear sense of audience and purpose	M	Final printout, plus written description	The overall effect of the presentation matches its stated purpose and intended audience. Students provide a short written description, explaining how their choice of material, effects and structure are appropriate to the audience and purpose of the presentation.

Getting started

The most common software package for this module would be Microsoft PowerPoint, although the presentation software in AppleWorks, or educational software versions, are also suitable.

You may also want to encourage students to use some of the following, if they are available, but they are not essential:

- Microphone
- Scanner
- Digital camera

- Digital video camera or web camera (plus supporting software to enable editing and viewing)
- Digital microscope

You will need to provide a suitable bank of resources from which students can select materials, such as clipart, CD-ROMs, curriculum materials, Internet sites etc.

You will also find it useful to provide sample presentations for students to discuss (for example, Who is the presentation intended for? Does it 'work' well? What features are good/bad/distracting?).

You could start the module by asking students to create a storyboard to describe how to carry out an everyday activity, such as making a favourite food. When they have created the basic slides, show them how to use animations and transitions. Give time for students to experiment with these effects, both in this presentation and in other multimedia presentations they have constructed previously (or which you have provided for them).

At this stage, you may need to offer some guidance to avoid over-enthusiastic use of effects.

Demonstrate how to control timings and introduce other effects. Students will need time to experiment, not only with timings within individual slides, but also on the overall timing given to each slide. For example, they will need to think about how long it might take an adult or a child to read a piece of information or an instruction, before an animation or sound is activated.

There are many approaches to combining text and graphics in a multimedia presentation. Students could experiment with using resources such as Photostory 3 (freely downloadable software) to link together still images and control the panning, transitions, text, narration and music. Students could then explore a presentation software (such as Powerpoint, Appleworks, Black Cat Slide Show, Textease Presenter or Hyperstudio) and consider how this differs, and where each resource could be used most effectively.

Prior knowledge	New words	
<ul style="list-style-type: none"> • Complements and extends 'Exploring Multimedia' 	<ul style="list-style-type: none"> • Transition • Slide view • Outline view 	<ul style="list-style-type: none"> • Automated presentation • Animation

Assessment guidelines

Students create an automated presentation, to teach about a particular topic or to explain how to do something.

At Pass level, students should be able to produce an automated presentation incorporating images, transitions and animation (such as 'fly in from left'). The material selected should be appropriate, even if the timings are not.

At Merit level, students should include appropriate timing and effects. (This will be evident from their written description for each slide.) They should be able to give a written description, referring to their choices of layout, timing, effects, images etc., to explain how these fit the purpose and the target audience. (The description does not need to cover all aspects of the presentation – three or four points should demonstrate this clearly.)

Spreadsheets for a Purpose (4291)

Introduction

In this module, students use spreadsheet software to create a working spreadsheet with a clear purpose. Students work methodically through a design and development process, being able to test, correct and modify the spreadsheet as they progress. They are able to create a final spreadsheet which suits its purpose and is presented in an appropriate way for its audience. They begin to understand how to evaluate their work, and can assess how well their spreadsheet meets its objectives.

Learning objectives

Learning objectives	Pass/ Merit	Assessment evidence	Amplification of assessment criteria
1 Design a spreadsheet with a specific purpose	P	Teacher evidence or printout	Students are able to design a spreadsheet to model a real-life scenario – for example, researching which bike to purchase. They are able to talk or write about what the objective of the spreadsheet is, and how their spreadsheet will help them to meet that objective. They understand enough about the data and formulas they need to include in the spreadsheet to make a start on it.
2 Create the spreadsheet	P	See below	Students enter data, text and formulas to create their spreadsheet. They are able to make modifications to their design to make it work.
3 Test the spreadsheet	P	Printout of spreadsheet, with formulas showing	Students are able to test their spreadsheet to check for errors and to see that formulas are correct. They make any corrections required, to create an accurate spreadsheet with very few errors.
4 Modify the spreadsheet to make it suitable for its purpose	M	See below	Depending on the purpose of the spreadsheet, students should be able to make the spreadsheet user friendly – for example, good use of titles and formatting, OR presenting the results of the spreadsheet in a way that is easy to understand by using appropriate graphs or charts.
5 Evaluate the spreadsheet	M	Printout of spreadsheet (not displaying formulas) with modifications made (LO4) and student's comments (LO5)	Students can evaluate how well their spreadsheet manages to suit its purpose. They are able to make suggestions for improvements, or give reasons for modifications they have already made.

Getting started

Any spreadsheet software can be used to deliver this module, including MS Excel or the spreadsheet from AppleWorks.

Students should already know how to create a working spreadsheet; this module is concerned with their ability to create a spreadsheet for a purpose. It can be a big leap for students to go from following instructions to designing and creating something by themselves, and they will need to build up a number of skills to be able to do this. Students can find it difficult to be creative and to keep their ideas within their skills with the software. Practice and your guidance are essential, so that students learn how to have ideas for spreadsheets which are achievable. You can help by providing tasks which are not too open-ended, and which provide the student with easy options for spreadsheets. The process the students go through is complex, so the scenario (design brief) does not need to be. A simple working spreadsheet which suits its objective well, and allows the student to fulfil all the LOs, is better than a complex idea which the student finds difficult to create without support.

Although it is not essential for the assessment of this module, students may need to have knowledge of a wider range of functions to use within their spreadsheets. It would, therefore, be beneficial while practising to incorporate new functions into a relevant context, so that students can extend the possibilities for their spreadsheet design.

Students need to learn how to design, test and evaluate their spreadsheets, and may benefit from working with some formal design, evaluation and testing methods, which could be provided by you or created by the group during lessons.

Prior knowledge	New words
Complements and extends 'Starting Graphs' and 'Exploring Spreadsheets'	<ul style="list-style-type: none"> • Design brief • Model • Test • System design • Evaluate • Scenario

Assessment guidelines

Both Pass and Merit students should be able to design and create a working spreadsheet to suit a particular scenario or design brief. They should be able to test their spreadsheet to make sure that it works. In addition, Merit students should be able to modify their design further, to make it more user friendly or to present the findings of the spreadsheet in an appropriate way. Merit students should also be able to evaluate their work in relation to how well it achieves its objectives.

For assessment of this module, you should present students with a design brief or scenario which will allow them to design spreadsheets within their ability and understanding (for example, a spreadsheet to work out which bike to buy).

Evidence should be in the form of before and after spreadsheets, showing evidence of modifications. It could also include test and/or evaluation sheets from the student, or their printouts could be annotated as evidence for evaluation.

Databases for a Purpose (4292)

Introduction

In this module, students use the knowledge and skills developed during Next Steps module 'Exploring Databases', and apply it to designing and implementing their own database. In doing this, they will need to consider how databases are used in the real world, and consider the features of a good database.

The aim is to allow students to demonstrate that they can consider what features are needed to make a useful database. This includes consideration of how the database will be used, who can enter information, and who can access it. Although it is not specifically assessed in this module, students should be aware that real databases may use many other means of data entry, for example, barcode scanners. They should be able to give examples and talk about the advantages of different methods. General discussion should cover the concept of personal data and data protection.

Learning objectives

Learning objectives	Pass/ Merit	Assessment evidence	Amplification of assessment criteria
1 Identify a purpose for a database	P	Written description	Student identifies the overall purpose of the database, and how it will be used.
2 Design, create and develop a database for a specific purpose	P	See below	Student creates a simple database, identifying an appropriate (not necessarily exhaustive) list of fieldnames. The student produces a simple data entry form to collect their data, so that a small number of records can be added to their database.
3 Utilise different field types	P	Printout which shows evidence of handling different types of data – for example, data entry form with yes/no field, or database screen captures showing dropdown lists	The student should be aware that different types of data may benefit from being handled differently. They can show this either in data entry forms or in how they set up the field types in their database. Example: students choose an appropriate format (text, number, yes/no, dropdown list) for each field.
4 Test database	M	Teacher evidence or printout	The student needs to demonstrate to you that the database works as expected. The student should be able to describe to the teacher two or three tests to be run, and the teacher should verify whether the tests provided the correct information in each case.

5 Demonstrate an awareness of data security	M	Written description of security measures	The student shows a basic understanding of how different users might need to see different information from within their database. They should also understand fundamentals of data security, for example, that only authorised people should be able to change data, and that passwords might be needed to allow different levels of access (for example, for viewing or editing).
6 Transfer data between applications	M	Printouts showing original document and revised document that includes imported information	The student uses data imported from/exported to other associated software packages, for example, spreadsheet/word processing package.

Getting started

You will need to provide:

- Database software, such as Microsoft Access, the database from AppleWorks, or a commercial database such as FileMaker Pro. There are also database packages designed for use in schools, which would be suitable
- Samples of questionnaires and real-life data collection forms
- Reference materials for students to use in building their own databases

It will be helpful to introduce the module by getting students to think about the different databases they have already encountered, or those they might encounter soon as adult citizens and consumers. For example, membership of a club, health records, customer surveys etc. – all these involve the collection of data on individuals, and its entry into a database. If they have mobile phones, students are likely to have on it a database of their contacts with related information. Perhaps they have wanted to buy a particular item and have searched through catalogues, either in book form or online. Perhaps their family has been trying to select a holiday, or book a train journey, or buy tickets for a concert – these activities also involve the use of databases. Similarly, they could be using a database such as iTunes to store their music and audio files. Which databases have been easier to use, and what has made some databases harder to use?

Show students how to create a form for collecting their data. The form does not have to be created within the database software, but can be created, for example, in a word processor, or even by hand. Students should be thinking about how to collect data efficiently and accurately, rather than about using complex form creation options or software.

When designing their database, it is important for students to try to identify all the questions they will want to answer, and so identify the full range of fields before they open the database application. (For example, in most databases, last name and first name are two separate fields; addresses are easier to sort for mailing lists - for example, on a membership/customer database - if each line of the address has a separate field, and so on.) Students should also consider how selection of a certain field type can support data accuracy in the database (for example, drop-down fields for where the possible options for a field content are known in hair or eye colour, etc.).

Some professional database software (like MS Access) will have many more features, and a more complicated user interface than the students are required to use for this module, so you should take care to limit the functionality so that the Learning Objectives can be achieved without students becoming confused by tools and options which are not necessary. For example, it is not a requirement of this module that students can produce a database with multiple tables, or create queries or reports from within the database software.

Prior knowledge	New words	
<ul style="list-style-type: none"> • Data entry • Simple database structure • Search criteria • Complements and extends 'Exploring Databases' 	<ul style="list-style-type: none"> • Flat file database • Distributed database • Field type/format • Browse mode/ layout mode • Form 	<ul style="list-style-type: none"> • Query • Report • Verification • Validation • Import/export data

Assessment guidelines

Both Pass and Merit students are required to show that they can identify the users of a database, the purpose of the database, and some of the key questions the database will be used to answer. They must also be able to design and implement a suitable simple database, by selecting appropriate fields and deciding how field values will be entered.

However, in addition to this, Merit students are required to demonstrate that they can check the performance of their database, and also show some appreciation of security issues. Merit students are also required to show that they can export information from their database into another application.

For example, a possible assessment activity might be to design and construct a membership database for a new sports club, with a range of different fields. For Merit students, data transfer out of the database into another application might include simply creating a new members list in word processing software for the club notice board; or creating a useful chart in spreadsheet software.

Control for a Purpose (4293)

Introduction

This module builds on the Next Steps module 'Exploring Control', and develops the use of sequences of instructions to control devices. In this module, students will use a control box, or other control device linked to a computer, to write sequences of instructions which will control more than one output device, and will build sequences of events to solve a problem.

Students will need to consider examples of real-life control systems, and should evaluate systems (including their own control solutions), identifying limitations. When working on this module, the sequence Plan–Test–Modify is very important. You should encourage students to check control sequences for errors, both by 'proofreading' procedures and by trialling them with real input data. Wherever possible, broaden students' experience to include control and monitoring applications which may be used in other subject areas (for example, automatic weather stations, datalogging equipment, computerised lathes).

Learning objectives

Learning objectives	Pass/ Merit	Assessment evidence	Amplification of assessment criteria
1 Design a control system	P	Written description of design problem and completed solution (with appropriate labelled diagrams), plus printout of procedure	This needs one or two paragraphs and/or labelled diagrams describing the sequence of events. This will be a basic rather than a full or sophisticated solution.
2 Build a sequence of events to activate multiple devices concurrently	P	See below	The outputs are activated by the appropriate input(s).
3 Correct and improve procedures	M	As above, but also a description of first attempt at a solution to the task, plus printout of initial procedure, and at least one intermediate version, identifying problems and attempts to correct them, along with a printout of the modified procedure	There must be evidence of trialling and attempted correction of problems. The final product must meet the specification, but does not have to be the optimal solution.
4 Evaluate the system, identifying limitations	M	Written statement (one or two paragraphs) identifying the limitations of the control system in its final form	The limitations will depend on the control software and hardware used, as well as on the construction demands of the project. The evaluation should include a comparison with how a 'real' system would behave.

Getting started

You will need a control device with a computer interface, or computer control simulation software, which allows students to write control procedures. It must include a range of input devices/sensors and output devices; it must be able to handle data from at least two input devices, and control at least two output devices simultaneously.

This is probably best tackled using a combined construction and control system kit, so as to reduce the construction skill demands. The module is about the use of monitoring and control, rather than the ability to build realistic working models, but it will be more enjoyable for students if they can produce a working model. A working model will also enable the students to investigate the effects of varying the commands, and adapting their model to meet certain requirements.

Get students to consider some real-life control systems and identify the stages. For example, what makes an automatic kettle, water heater or heating system switch on or off? What kind of input devices does the system use? What output devices does it need? What is the sequence of events?

Students will need to think out the sequence of events they need before they try to write procedures. Look at a range of automated processes, and draw attention to the kinds of input that might be used. For example, a car park entry system might be activated by movement (via a sensor), by a push button, or by a password. Introduce the use of a flowchart, and ask students to construct flowcharts for some 'simple' control systems, such as a lift: what has to happen before a lift can go up or down?

Get students to begin by writing simple control sequences and then progress to more complex instructions and procedures, for example:

- Make a lamp flash or a motor turn, then
- Make a buzzer sound when the temperature sensor is 'warm', then
- Make the buzzer sound when the temperature sensor is 'warm' AND a slide switch is 'on', then
- Write a control sequence for a set of traffic lights, or to turn an appliance on and off at set times of the day
- Consider an application which might require more complex control of inputs and outputs - for example, a fairground/theme park ride which can change speed and/or direction, have lights which turn on in certain conditions, and/or have a safety override switch

In real systems, safety is a vital feature, so students should be encouraged to check for errors in the procedure, and to carry out test runs at each stage of recreating and refining a control system. Students should also consider when and how an operator might be able to override the control system, and perhaps how the system might alert the operator to a potential dangerous situation (for example, a system overheat, a person moving too close to dangerous machinery, a device moving too quickly, etc.).

Prior knowledge	New words	
Assumes that students understand procedures	<ul style="list-style-type: none"> • Switch off • Switch on • Wait • Run • Activator • Loop 	<ul style="list-style-type: none"> • Feedback • Data capture • Analogue • Digital • Interface • Flowchart
Complements and extends 'Starting Control' and 'Exploring Control'		

Assessment guidelines

For a Pass, students should be able to produce a basic working solution, but do not have to demonstrate trialling or refinement of the solution. For a Merit, students need to demonstrate several stages of refinement of the solution, rather than perfection, and should be able to describe the limitations of the control system. The solution should include some attempt to consider safety features, but does not need to identify all possible problems.

Provide students with a design brief which makes a range of solutions possible.

The Assessment Criteria are about the fitness of the control system for its purpose, not the student's ability to build a model.

Examples of possible assessment activities are: a packing system which requires boxes to be loaded with a fixed number of items before being moved off; a carousel; a ferris wheel. All of these allow the possibility of increasingly sophisticated solutions.

Website Design for a Purpose (4294)

Introduction

In this module, students are introduced to web page design. They learn how to create a simple series of connected web pages, incorporating links to other pages and to other websites, creating some basic navigation through their pages. They are able to select and arrange images and text on the pages, so that they are appropriate to a particular audience, and give the content some simple organisation. They understand the basics of HTML coding. The aim is that the students begin to understand some of the differences between web pages and other documents, and start to think how to present content in a suitable way.

Learning objectives

Learning objectives	Pass/ Merit	Assessment evidence	Amplification of assessment criteria
1 Create a series of connected web pages	P	See below	Students should be able to organise text into a series of two or three web pages. Students know how to save their pages so that they can be viewed as HTML.
2 Include links	P	See below	Students provide working links to and from all of their web pages. Students also include links to other websites. The links should be easily identifiable and placed sensibly within the pages, but there is no expectation for a navigation menu at this level.
3 Insert images	P	A screen capture of the web pages or a single saved web page (representative of all the criteria)	Students are able to insert images into their web pages. They should be of an appropriate size and quality, and students should be able to demonstrate that they are in control of where the images are placed.
4 Demonstrate user awareness	M	Screen capture or saved web page showing changes/refinement made for this learning objective	Students test their site (the two or three pages from LO1–3) and make refinements to the navigation options to make it more user friendly or more appealing to the target audience. They demonstrate some idea of consistent navigation (for example a very simple navigation menu), and of consistency in content presentation between the pages. They change font or page formatting to make it more suited to their audience, considering that not all fonts are available through all browsers so this may affect the way the viewer sees the web page.

5 Recognise HTML code	M	If the student has created web pages with HTML code, no further evidence required. Otherwise, a printout of the source code of one of the web pages identifying/describing at least two of the tags is required	Students are able to identify some basic HTML tags in the source code for a web page OR they are able to create a very simple web page using HTML code.
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Getting started

Any simple web page design software can be used for this module. (MS Word can also be used by selecting the 'Save as web page' option, but this approach tends to create very large web files which may not be easy to manage. In addition, MS Word may require some extra explanation about the source code it generates, because it is very complex. You should also show students what works and what does not in web pages because, unlike web design software, MS Word will allow you to create things and then change them afterwards when you save as HTML).

It is also possible to deliver this module just using Notepad (by saving as xxx.html), because only a small number of simple HTML tags are required to achieve all the Learning Objectives.

The web pages created do not have to be published on the Internet – this is not assessed in this module, but students should consider the purpose of their web page and the viewers who would access it.

You can give students the content – they do not have to create it – but you should give it to them in such a way that they cannot simply do a 'save as HTML' from the documents they are given.

Designing for a purpose is easiest if both the audience and the objective are very clearly defined, and are something that the students are likely to understand. For example, students could not be expected to know what sort of features to include in a website for a professional business audience, but could be expected to know how to make web pages appealing to students of their own age, or for small children.

Students would also benefit from doing some simple website criticism - for example, by finding good sites and bad sites and looking at which things work well.

Image sizing and quality for the web can be a complex area which is not covered in the module. However, students are expected to be able to select images of the right size and quality for their purpose. They should be aware that the higher the quality of the image, the longer it will take to upload, and they should begin to balance the size and quality of the elements of their web pages. They could either collect images from the Internet, or select from a range provided by you. Students do not need to create the images themselves.

Even simple navigation can get complicated when there are several pages linked together, so you should encourage students to test all links.

Encourage students to create simple sites which work well and suit their purpose, rather than complicated sites which do not work properly and have too much going on to be efficient for their purpose.

Prior knowledge	New words	
<ul style="list-style-type: none"> • 'Exploring the Internet' module • Some awareness of how to make documents suitable for an audience 	<ul style="list-style-type: none"> • Hyperlinks • Anchors • HTML • Tags 	<ul style="list-style-type: none"> • Source code • Image quality • Image size

Assessment guidelines

Both Pass and Merit students need to be able to create a short series of linked web pages in which they have demonstrated an ability to organise text, images and links to suit its purpose, and to make it function as a simple website. In addition, Merit students need to be able to show that they have a deeper understanding of the way web pages are constructed, by being able to recognise some basic HTML tags. Merit students also need to be able to work independently to test and refine their work, to make it more suited to its purpose.

For assessment of this module, you could give students some extracts of text from a newspaper about a topic of interest, like a theatre event. They could then use this information to create some pages of information about the event. Provide students with images to select from, and perhaps also ask them to find web links to other similar events, or to the theatre company, to include in the web pages.

For Pass students, a screen shot of the web pages or a single saved web page would be sufficient evidence, if all criteria are demonstrated and the web page is a fair representation of the other pages.

For Merit students, evidence of refinements and changes to web pages, to make them more suited to their purpose, would be necessary. A screen shot or saved web page showing changes from previous (Pass) printout would be sufficient. If the students have written the pages using HTML code, no further evidence would be required. However, if the students have used web design software, a printout of some source code annotated by the student, identifying at least two of the tags, would be required.

Networks for a Purpose (4295)

Introduction

In this module, students are introduced to networks. The aim of the module is for students to become familiar with what makes up a network, and to understand a little about their purpose. They look at simple network design, and begin to understand how networks can be managed efficiently.

Learning objectives

Learning objectives	Pass/ Merit	Assessment evidence	Amplification of assessment criteria
1 Design a simple network	P	See below	Students can create a design for a simple network, for example, a small home network. Students should be able to produce a system which has all the relevant items connected in a meaningful way, and should demonstrate that they have made an attempt to show how the system could connect to the Internet.
2 Identify the purpose and components of a network	P	Paper-based or printed network diagram	Students add an index to their design which describes each component of their network and its function.
3 Demonstrate understanding of management issues associated with networks	M	See below	Students can list two or three management tasks for their network, with explanations of why they are important.
4 Understand network security issues	M	Completed answer sheet for LO3 and LO4, or annotations on the system diagram	Students can describe some security measures that would be appropriate to implement for their network.

Getting started

Students can use pen and paper to design their networks, or create their diagrams in another application. There are also specialist software programs which are suitable for design, such as Visio.

If the network diagrams are to be created electronically, then careful choice of software will make this task easier – creating complex drawings in word processing software can be a difficult task.

Having symbols for the network components available on a disk, or stored on the school network, would be useful.

If appropriate, give the students a guided tour of the school network or, if this is too complex, use a computer room or a simple network model of some sort. Students will benefit from seeing simple network diagrams for real-life networks, and by seeing lots of examples.

Inform students about a range of management and security issues relating to networks, such as: updates to software; virus protection; user names; regular backups; passwords for Internet dial-up; training the users.

Prior knowledge	New words	
<ul style="list-style-type: none"> Recognise and identify hardware Understand some simple reasons for connecting machines into a network 	<ul style="list-style-type: none"> LAN WAN Node Switch Hub Router 	<ul style="list-style-type: none"> Wireless UTP Jack File server Modem Bandwidth

Assessment guidelines

Both Pass and Merit students will need to be able to design a simple network. They should produce a simple schematic of the network, naming each component and its function. They can describe, in simple terms, how the network functions.

For assessment of this module, students could design a home network, including a specified list of hardware, and with a view to fulfilling the requirements the family might have for the network. Students could then suggest appropriate management tasks and security measures which relate specifically to this network. Evidence would be in the form of a network diagram, with an index explaining all the components and their function. For Merit students, this should also include notes to cover LO3 and LO4.

Video or Animation for a Purpose (4296)

Introduction

In this module, students are introduced to either video-editing or animation software. The aim is to demonstrate to students that both animation and video can be produced, edited and applied with the aid of computer software and hardware. By the end of the module, students should have created a finished animation or piece of film, with a specific audience in mind.

Learning objectives

Learning objectives	Pass/ Merit	Assessment evidence	Amplification of assessment criteria
1 Create a plan for video or animation	P	Simple storyboard (can be hand-drawn)	Students must plan their video or animation on paper initially, and must limit their work to within the capability of the technology available to them.
2 Create source material for video or animation	P	See below	Video: this will involve filming, showing an awareness of the effect of focusing, zooming and the speed at which the camera is moved (to compensate for blurred images). Recorded footage should then be downloaded onto the computer. Animation: students can create or adapt an appropriate picture, considering size, shape and colour. The picture should be saved, either on a disk or the hard drive, for later retrieval.
3 Produce video or animation with appropriate software	P	Final video or animation (saved to CD-ROM or floppy disk)	Video: students need to be able to make informed decisions to remove certain pieces of footage, and to order the clips according to their plan. Animation: students should be able to use appropriate software to amend and alter the picture for different frames of the animation. The animation should include at least five frames. The software can be used to produce middle movements (for example, tweening), but the students must have manually created at least three of the frames themselves by editing their original picture.
4 Add soundtrack or narration to video or animation	M	See above	Video: students should be confident enough with the software to add a piece of appropriate music, or recorded narration, over their film. Animation: if no additional software is available, music or narration could be demonstrated in a presentation to class (including audio on a CD or cassette player), with the teacher providing the evidence for assessment.

5 Demonstrate awareness of how the finished media text addresses a specific audience	M	Teacher evidence or printout	
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Getting started

As an introduction to this module, it would be beneficial for students to explore websites and CD-ROMs, considering how they use video and animation to demonstrate ideas, give further information and develop aesthetics. You will need to demonstrate to the students how to create a simple animation, or download and edit a piece of video. Any video editing or animation creation software could be used to deliver this module. However, straightforward software such as Windows MovieMaker (Windows XP) and GIF animator are good examples. Macromedia Flash, or other software which creates simple flash animations (e.g. Coffeecup Firestarter), may also be used. If digital cameras are not available, students can achieve effective results with a simple webcam.

Prior knowledge	New words
Can use a simple paint package	<ul style="list-style-type: none"> • Animation • Footage • Edit • Media player file
Complements and extends 'Exploring Images' and 'Exploring Multimedia'	<ul style="list-style-type: none"> • Preview • Focus • Download • Insert • Frame • Tween

You should encourage the students to keep their ideas for videos or animations very simple, so that they are achievable with the software available without too much effort from the student. This module is about the process the students go through, rather than how complicated they make the final video or animation. The module is about utilising and controlling the software (and/or hardware) to achieve a fairly simple end point, rather than the student's ability to use complicated professional products.

It is important to limit the scope of this task, according to the time and resources available. A very effective simple animation can be created with a freeware GIF animator, although for Centres with video hardware and editing software, this module would be a useful introduction to video production work, which can be used in a number of subject areas. Showing examples of work from other students would be particularly helpful. Students must show that they can plan on paper before using the technology.

Assessment guidelines

Pass students should be showing competence using both software and hardware, but may not be able to solve all the problems they encounter. Merit students will be able to show that they can create a multimedia text for a particular audience, and will be able to enhance their production with a music soundtrack or narrative.

You may have to split this assessment into smaller sessions for logistical reasons (time of filming, availability of editing facilities etc.).

On Track Learning Objectives Record Sheet

Student Name

Students must achieve *all* Pass Learning Objectives to gain a Pass.

Students must achieve *all* Pass *and* Merit Learning Objectives to gain a Merit.

For an explanation of each Learning Objective, please see the Amplification section of the relevant module.

Stage 1

Student was able to:	Pass/ Merit	Please tick
Documents for a Purpose (4289)		
Create and format text which is suitable for a particular purpose	P	
Adjust properties to allow graphics, or other objects, to fit well within the document	P	
Insert table into document	P	
Use advanced formatting features	M	
Use page formatting options	M	
Adjust page formatting for a specific audience	M	
Date of assessment		

Multimedia for a Purpose (4290)		
Create a plan for a presentation	P	
Recognise and select appropriate source materials	P	
Incorporate transition and animation	P	
Incorporate timings, audio and 'build' effects	M	
Demonstrate a clear sense of audience and purpose	M	
Date of assessment		

Spreadsheets for a Purpose (4291)		
Design a spreadsheet with a specific purpose	P	
Create the spreadsheet	P	
Test the spreadsheet	P	
Modify the spreadsheet to make it suitable for its purpose	M	
Evaluate the spreadsheet	M	
Date of assessment		

Databases for a Purpose (4292)		
Identify a purpose for a database	P	
Design, create and develop a database for a specific purpose	P	
Utilise different field types	P	
Test database	M	
Demonstrate an awareness of data security	M	
Transfer data between applications	M	
Date of assessment		

Stage 2

Control for a Purpose (4293)		
Design a control system	P	
Build a sequence of events to activate multiple devices concurrently	P	
Correct and improve procedures	M	
Evaluate the system, identifying limitations	M	
Date of assessment		

Website Design for a Purpose (4294)		
Create a series of connected web pages	P	
Include links	P	
Insert images	P	
Demonstrate user awareness	M	
Recognise HTML code	M	
Date of assessment		

Video or Animation for a Purpose (4296)		
Create a plan for video or animation	P	
Create source material for video or animation	P	
Produce video or animation with appropriate software	P	
Add soundtrack or narration to video or animation	M	
Demonstrate awareness of how the finished media text addresses a specific audience	M	
Date of assessment		

Please sign and date this form when the student has demonstrated through an assessment test that he/she can achieve the Learning Objectives of each module at Pass or Merit level without any additional assistance.

Teacher

Date

4. Assessment procedures

4.1 Assessment tests

The Cambridge ICT Starters assessment tests, or assessments created by the Centre *and approved by Cambridge* (see 2.2), must be completed within the suggested time scales, under supervised and controlled conditions. To conform with safe working practices in using display screen equipment, we recommend that you allow students to take short approved breaks from working at their screen (5–10 minutes every hour, if appropriate), without leaving the assessment room. Such breaks may naturally form part of the working pattern, as students study the assessment test material. The Centre is responsible for maintaining security during such break periods.

Students must complete the assessment tests under supervised and controlled conditions. It is possible to carry out the assessment during normal timetabled periods, during the normal working day, as long as all procedures are followed.

During the assessments, students are not permitted access to their own files. Students cannot receive any tuition after they have commenced the assessment.

4.2 Preparation for assessment tests

Before using an assessment test, teachers must work through it, using similar hardware and software to that used by the students, to:

- **ensure that the hardware/software at the Centre will enable the students to achieve all the Learning Objectives**
- **ensure that the students will understand their terminology**
- **ensure that other necessary resources (raw data, graphics etc.) are available for students, in order that they can carry out the activity under controlled conditions.**

Centres should send any requests for special assessment requirements to Cambridge, in writing, at least two months prior to the planned date for assessment.

4.3 Administering the assessment

Centres are responsible for ensuring that the hardware and software to be used by students is in full working order, and that it will enable them to fulfil all the Learning Objectives of the module, as specified in this syllabus. Errors as a result of faulty software or hardware will not be taken into consideration during the appeals procedures. In the event of a system crash, power cut or damage to equipment during the assessment, Centres may allow students a fresh attempt at the assessment test.

Centres should ensure that stationery is available to their students. Students can use dictionaries, spellcheckers, their own notes, Centre-prepared manuals on the software package, manufacturers' manuals or the software's Help function during the assessment. No other help can be given to students during the assessment, unless there is an equipment failure.

Teachers will need to observe certain Learning Objectives within the modules, such as 'Save data'. Where appropriate, do this by checking the students' files after the assessment has been completed, or during the assessment tests. Teachers must record this on the Learning Objectives Record Sheet and sign it. Submit the Learning Objectives Record Sheet, together with the students' completed printouts (i.e. evidence of the assessment test), to Cambridge for moderation. Each printout should include the student's name and the date on which the assignment was carried out.

4.4 Security issues

The teacher, or another suitably competent individual appointed by the Centre, must be present throughout to supervise the assessment.

Students must not communicate with one another in any way, and security of the individual student's files must be ensured. They cannot ask for, or be given, help from the teacher, except in the case of a systems failure.

All assessment tests must be treated as confidential. Only use them at the time of assessment.

All work stored on the network or hard disk must be kept secure. Centres are advised to consider setting up passwords to control login procedures, and to ensure only authorised access to files.

Centres must ensure that:

- **potential students do not have access to the assessment tests**
- **at the end of each session all assessment material, i.e. assessment tests and students' completed work, is collected by the teacher**

Centres must keep Students' Learning Objectives Record Sheets and completed assessments securely between assessments and before submission to Cambridge. In no circumstances should Centres leave them in the custody of the students.

4.5 Submission of students' work

Centres should submit students' work to Cambridge on completion of the Stage 1 modules, the Stage 2 modules or all modules together which constitute the full qualification. Centres should put forward for moderation and certification only those students whose work reaches the required standard, meeting all the specified Learning Objectives in each module.

Teachers are requested to send in portfolios for a sample of students (see 4.6). These portfolios must contain the evidence for each student in the sample (i.e. the printouts produced in the assessment test) and their completed Learning Objectives Record Sheet. Identify clearly each module for submission in the portfolio with the student's name, Centre, Centre number and module details. All Learning Objective Record Sheets should identify the grade awarded by the teacher to each student in the sample.

In addition, the teacher must include a portfolio of assessment tests (i.e. the tasks given to the students), including worked answers for each module submitted.

4.6 Submission of the sample for moderation

The Centre must submit to Cambridge samples of Centre-based assessment for moderation using the following criteria.

- If there are 10 or fewer students entered, all the Centre-based records which contributed to the final assessment will be required.
- If there are more than 10 students entered, all the Centre-based records which contributed to the final assessment will be required for the number of students shown in the table below.

Number of students entered	Number of students whose work is required
11–50	10
51–100	15
above 100	20

The teacher, or Centre co-ordinator responsible, must select the 10, 15 or 20 students covering the grade range for each module. Where there is more than one teacher involved in evidencing the work of students, the sample must include, in equal number, students assessed by all teachers.

If Cambridge's Moderator thinks it necessary, Cambridge will request further samples of students' work. The Centre must despatch these as soon as the request is received.

5. Additional information

5.1 Guided learning hours

We do not give defined learning hours in any of the modules as students of different ages, with differing levels of experience and using ICT in different curriculum areas, may progress at different paces.

5.2 Recommended prior learning

Candidates beginning this course are not expected to have studied ICT previously.

5.3 Resources

Copies of syllabuses and Principal Examiners' reports for teachers are on the Syllabus and Support Materials CD-ROM, which we send to all Cambridge International Schools. They are also on our public website – go to **www.cie.org.uk/ictstarters**. Click the **Subjects** tab and choose your subject. For resources, click 'Resource List'.

You can use the 'Filter by' list to show all resources or only resources categorised as 'Endorsed by Cambridge'. Endorsed resources are written to align closely with the syllabus they support. They have been through a detailed quality-assurance process. As new resources are published, we review them against the syllabus and publish their details on the relevant resource list section of the website.

Additional syllabus-specific support is available from our secure Teacher Support website **<http://teachers.cie.org.uk>** which is available to teachers at registered Cambridge schools. It provides past question papers and examiner reports on previous examinations, as well as any extra resources such as schemes of work or examples of candidate responses. You can also find a range of subject communities on the Teacher Support website, where Cambridge teachers can share their own materials and join discussion groups.

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