

Lambeth Informatics KS1&2

Problem solving with Information Technology

I n t r o d u c t i o n

This document draws together the key components of the knowledge, skills and understanding required by children in Key Stages 1 and 2, together with preparatory work in the Nursery and Reception classes.

This scheme concentrates on specific targets, which are likely to be achievable by either everyone or at least the vast majority of children in a particular year group. The targets are strictly limited in quantity and scope, and make use of a very narrow range of generic software. Each target can be met by teaching solutions to specific problems across the full range of curriculum subjects and activities.

This approach does not mean that pupils should be prevented from progressing beyond the targets set for their year group, but that all pupils should be equipped for the work appropriate for the following year. This will allow for proper teaching, continuity and progression of basic key problem solving skills using IT.

The emphasis throughout is on what children need to be able to do in order to become more capable in each of the four process areas, applied across the curriculum. We need to move away from over-dependence on subject specific software, and also on computer-based activities which are not fully integrated with other work being undertaken at the same time. Different children can meet each target in different ways, through different activities.

The targets are grouped according to the problem-solving area, rather than by reference to specific software: these areas are

- drafting
- painting
- data handling
- modelling
- controlling.

Note that in each year the number of targets is very small - thus producing realistic and achievable goals for all teachers and children.

This document is intended to be a working draft which will progress from year to year as the IT capability of pupils and teachers rises to approach national curriculum achievement levels.

All the targets should be achievable in 15 hours over the year for each child, but not necessarily working alone. Much can be achieved by children working together at a computer. With a class of 30 children working in pairs at a computer, the computer would need to be in use for just 7½ hours per week over a period of 30 weeks. In practice, however, the computer will be in use for much more than this for other non-IT related uses.

P r i n c i p l e s

1. IT is a core skill and should be treated as such.
2. IT capability needs to be achieved by all pupils at their appropriate levels.
3. IT needs to be taught and understood by all teachers.
4. Support staff should be trained in IT use.
5. The scheme should be manageable and expectations should be realistic.
6. Monitoring, recording and assessment should be done by exception or in accordance with school policy.
7. It is essential for the whole school to commit to the targets.
8. Implementation of the targets will be progressive over time.

S o m e I s s u e s

Software toolkit

Even a cursory look at the targets makes it clear that only a limited selection of software is required. In addition it is plain that the generic software required has equivalents on each platform in general use in UK schools. In most cases this software toolkit will already be available in most primary classrooms. We would recommend that the kit is used for all activities whether for IT or for the use of IT in other curriculum areas to increase confidence, familiarity and efficient use.

Drafting	<ul style="list-style-type: none"> ▪ a keyboard overlay program ▪ a word processor that has a facility for word banks ▪ a word processor which allows WYSIWIG fonts, colours and pictures. 	Flexiwrite, First Word, Point, Minnie, Write Away
Painting	<ul style="list-style-type: none"> ▪ a program that uses mouse clicks to colour in areas of a hidden picture; ▪ a painting program which has a symmetries option; ▪ a painting program which allows area copying and moving plus zoom features. 	Paintspa, Paintpot, Colour Magic, PictureCraft
Data Handling	<ul style="list-style-type: none"> ▪ a program which uses mouse click to create pictograms or charts ▪ a simple single column data handling package. ▪ a graphically based data handling package which allows queries. 	Counter, Counter+, Counting Pictures, Clipboard, First Base
Control	<ul style="list-style-type: none"> ▪ a vehicle whose movements can be programmed ▪ a Logo program which allows start-up definitions and saved procedures ▪ a logo extension or other logo-like language which allows the control of outputs. 	Roamer, Valiant Turtle LOGO, First LOGO
Modelling	<ul style="list-style-type: none"> ▪ an "adventure" program ▪ an investigation or simulation program ▪ a spreadsheet which can produce graphs and charts 	Through the Dragon's Eye Tiles, Fletcher's Castle Starting Grid

Minimum Hardware

Older machines, such as the Nimbus PC186 can cover all aspects of this scheme, although many aspects are easier to achieve with more modern systems that have Windows or equivalent capability.

Required computer and associated peripherals

- overlay keyboard
- mouse
- minimum of 16 colour palette, preferably 256
- black/white printer and access to a colour printer on occasion
- a 16 bit computer with 1Mb memory
- pre-configured software on a hard drive, network or turnkey disks with a menu or windowing environment (RiscOS, Windows or MacOS).

Progression and Transition

In the first few years of any progressive scheme of work there are transitional problems, where for example the teacher of a Y6 class would appear to have to teach all preceding years' targets. In practice this does not appear to be a problem. We recommend that until the scheme has worked through the school, teachers attempt to raise achievement to the level they can deal with.

This transition process will differ from teacher to teacher even in the same school. For example the Y6 teacher might decide that they can reasonably achieve the Y4 targets for all pupils and take some of the more able pupils to higher levels.

Assessment and record keeping

Record keeping in this scheme is relatively simple as all the tasks are intended to be achieved by all children. Thus record keeping can be performed on an exception basis; i.e. only those children who do not achieve year targets or who achieve higher targets need to be recorded.

Assessment is also simple as the targets are effectively learning outcomes, which can be monitored by observation, and other means as appropriate. Note however that printed outcomes are less useful as evidence of achievement as in the main the intended learning outcomes regard process. Annotated printouts are however of more value.

Contexts

Traditionally in IT there was an attempt to make the context of IT activities the same for all pupils. For example pupils would all write about their trip to the zoo, which often resulted in the last three groups writing about an activity nearly a half term in the past.

Our targets are designed on the basis that they can be carried out with an activity based on the work being done by the rest of the class at the time the IT work is being done. For example the first 4 groups might write about the trip to the zoo, the next 5 groups might use writing about a science experiment and the last 4 groups might use a history story as the context.

Opportunities should be taken to discuss the use of computers and for children to consider the advantages and disadvantages of their use over traditional "pencil and paper" methods, so that they develop an understanding that the use of information technology may not always be the most appropriate solution.

Commitment/Guarantees

The progressive nature of the targets only gains its full benefit when succeeding teachers can rely on their colleagues in earlier years succeeding with their own targets. In our experience this process is greatly improved when the scheme as a

The targets

The remainder of this document details the targets. For each target problem a solution is offered along with teacher's notes, a typical example and an 'I can do IT' section for teachers and children alike.

whole is explained and discussed with the full staff, then governors and parents before being agreed as the school way forward on developing IT.

The strategy in context

There is a strong possibility that the several deliberate features of this scheme will be misunderstood by colleagues, management and governors and it is important that you feel comfortable with the rationale and reasoning behind the decisions underlying this scheme:

1. Many teachers are still not making good use of IT and confuse the use of computers for language development or mathematics with developing pupils' IT capability;
2. National Curriculum standards are not achievable yet by all teachers, many of whom opt out of any IT because they cannot cope with the full scale;
3. There is little support material for IT teaching because the subject has been seen as "cross-curricular" and impossible to resource because it will vary in its use from classroom to classroom. Also there has been no development of pedagogy and other methodological support for teachers;
4. OFSTED inspectors and other external sources are looking for NC achievement but this short term approach is likely to lead to much higher standards of achievement than previous schemes of work which attempted to reach NC standards too quickly.

Drafting KS1

	Target Problem	Solution	Teacher's Notes	Examples	PoS	L	I can do IT!
N	Producing child's name or individual letters on the screen and on paper	Use Concept Keyboard (with teacher loading the software), mouse or keyboard	Finding letters on keyboard and matching them to written text	Use to label pictures of themselves or as labels for their trays / pegs.			I can write my name or some individual letters on the screen.
R	Produce and change text on screen, print the work.	Use Concept Keyboard, mouse or keyboard. Introduce Shift key for capital letters.	Word list and rub-out function on the overlay. Recommendation: keep the sentences very short and choice of words limited.	Type out alphabet, correcting mistakes. Type out sentences such as "Malcolm likes ..."	1a 2a	1	I can write with small letters on the screen. I can write with capital letters on the screen. I can change my writing. I can print out my work with help.
Y 1	Write simple sentences, correct mistakes and print the sentences.	Use a word processor with a word bank on the screen, using the mouse to correct and to print. Use qwerty keyboard to add on words.	Recommendation: Make word bank, using words suggested by the children, and teach children how to click on them to add and delete. Progress to adding in words from keyboard.	Make notes for displays. Make a page for a class book, such as our favourite animals.	1a 2a	1	I can write simple sentences. I can correct my mistakes. I can print out my changed work with help.
Y 2	Draft and re-draft simple sentences, saving and loading these between sessions	Use a combination of keyboard and word bank, saving and loading own work. Position cursor to insert or delete any word or words.	More words should be keyed in independently. Recommendation: Discourage use of the rub-out icon unless with the last word typed. Work should be saved regularly.	Could use an existing framework, e.g. "A postcard from holiday", where children fill in the gaps, add punctuation, etc.	1a 2a 2b 2c	2	I can write some sentences and save my work. I can load my work and re-draft my sentences. I can print out my work on my own.

Drafting KS2

	Target Problem	Solution	Teacher's Notes	Examples	PoS	L	I can do IT!
Y 3	Draft and re-draft simple sentences, changing the way the text looks.	Restricted use of word banks. Highlighting words and phrases and adding emphasis (bold, italic, different fonts).	Word banks only for some pupils. Recommendation: Discuss the use of formatting (lay out) to match purpose of writing.	Take short newspaper report and change adjectives, emphasis, etc. to make more forceful.	1a 2a	3	I can use tools like bold and italics to improve my work.
Y 4	Take draft text, proof-read and redraft it as required.	Increased use of cursor positioning and highlighting to make changes to blocks of text.	Recommendation: Use spell check facility if available.	Load a short piece of writing, such as a poem or letter, check for errors and correct them.	1a 1b	3	I can do some more writing with purpose. I can proof-read my work. I can re-draft my work.
Y 5	Move text from one part of a story to another. Alter appearance of piece to make clearer. Add drawing or picture.	Cutting, copying and pasting, centring and justification.	Recommendation: Layout formatting should not be attempted until the drafting is finished and saved.	Take sequence of instructions and move into correct order.	1a 1b 1d 2a	4	I can cut and paste some text. I can use commands to centre some text. I can add a drawing or picture to my work
Y 6	Finding and replacing words and phrases. Arrange text into columns.	Use of the find/replace commands, and the tab key. Use of tables if available.	Recommendation: Choose content for writing which involves columns, such as recording observations.	Take a short story and alter the character's name or sex throughout. Record results of survey or experiment in table.	1a 1b 2a	4	I can use the find and replace commands. I can arrange text into columns.

Painting KS1

	Target Problem	Solution	Teacher's Notes	Examples	PoS	L	I can do IT!
N	Colouring an existing picture on the screen	Use a mouse with simple painting package such as Picturecraft.	Recommendation: Teach children the correct way to hold and operate a mouse or roller ball	Load picture and fill different parts			I can colour in a picture on the screen using the mouse.
R	Painting with different colours	Use simple painting package to select colours with mouse and then free-hand painting	Recommendation: Configure the program to "point and click" rather than "hold and drag", if possible.	Make a picture of "me", "my house", etc.	1a 2a	1	I can paint on the screen using different colours. I can print my picture with help.
Y 1	More complex paintings involving shapes and patterns	Use a range of tools, including the symmetry options where available.	Recommendation: Ensure that pictures have been drawn using all the available tools.	Use symmetry tools to draw shapes e.g., butterflies.	1a 2a	1	I can make patterns on the screen using different shapes. I can print my picture with help.
Y 2	Paint pictures with straight lines and appropriate regular shapes. Save and retrieve work between sessions.	Use line and shape tools with teacher help to navigate the menus. Use hollow and solid shape tools. Children should be able to find their own work.	Recommendation: Choose a context for the painting which demonstrates the advantages of using these tools. Establish good practice with saving work	Make a geometrical pattern from rectangles, triangles and circles, e.g. a bus or a house - make a Tangram.	1a 2a 2c	2	I can use line and shape tools with my teacher helping me with the menus. I can use hollow and solid shape tools. I can find, load and print my own work.

Painting KS2

	Target Problem	Solution	Teacher's Notes	Examples	PoS	L	I can do IT!
Y 3	Integrate small amounts of text with pictures.	Use the text tool in conjunction with those above.	Recommendation: Confine text to simple short labels or captions, e.g. title.	Make a simple greetings card.	1a 1b	2	I can use the text tool to add text to my work.
Y 4	Improve quality of pictures, concentrating on what can be achieved with a computer which cannot be done easily in other ways.	Wide range of drawing tools by navigating the menu system. Re-work saved pictures with the rubber & other tools.	Recommendation: Ensure that children select the appropriate tool for the chosen task e.g. spray tool compared to fill tool. First version should be saved before reworking.	Take existing picture and make changes, such as removing unwanted lines, changing colours.	1a 1b 2a 2b	3	I can use lots of drawing tools using the menus. I can re-work saved pictures using the rubber and other tools.
Y 5	Create more complex pictures through manipulation of simple components	Cut, copy, move and flip tools on small parts of painting to quickly create complex scenes. Repeat patterns.	Recommendation: Ensure that the one element to be manipulated only occupies a small part of the screen to start with.	Make a tiling pattern by using any 4-sided shape, rotating and reflecting and using different colours.	1a 1b 2a 2b	4	I can cut and copy and use the move and flip tools on small parts of my painting to quickly create a more complex scene. I can repeat patterns.
Y 6	Improve overall quality of pictures by incorporating some fine detail.	Zooming to re-touch at pixel level.	Pixels are the individual dots that make up a picture.	Produce a free-hand drawing then use zoom to tidy up lines and edges and ensure no gaps at corners.	1a 1b 2a 2b	4	I can use the zoom tool to re-touch my painting pixel by pixel.

Data Handling KS1

	Target Problem	Solution	Teacher's Notes	Examples	PoS	L	I can do IT!
N	Not applicable						
R	Provide experiences in recording collected data and of presenting it in the form of a chart	enter the data to produce a simple chart and print it out	Recommendation: Input by teacher with children contributing.	Teacher chooses topic. Children put counters in pots to record their favourite, then transfer to program.	1a 2a	1	With help, I can enter some data and make a chart.
Y 1	Provide experiences of sorting data, presenting it graphically, and answering questions from charts	Sort data and present more than one form of chart(e.g. bar charts and pictograms), and print for analysis	Recommendation: Introduce as part of whole-group teaching activity.	Each group choose a topic, ask others for their favourites, then enter data and produce charts.	1a 2a	1	With some help, I can sort data and produce more than one form of chart. I can print my chart and answer my teacher's questions about it.
Y 2	Look at information in a file to find the answers to simple questions	Use Clipboard or similar to look at information from a data file already set up.	Recommendation: Discuss contents of file and make up set of questions as whole group.	Teacher makes file of pupil data, then sets questions e.g. Who likes . . .? Who has blue eyes? Does Andrew like...?	1a 2a	2	I can use Clipboard or a similar program to enter simple queries from a file that has been set up.

Data Handling KS2

	Target Problem	Solution	Teacher's Notes	Examples	PoS	L	I can do IT!
Y 3	Interrogate a data file to find the answers to simple queries	Use Clipboard to enter simple queries based on numeric and alphanumeric fields, from a data file already set up.	Recommendation: Make use of large and clear crib-sheets/cards. Ensure results are recorded in some way.	Do a survey of hair and eye colour. Ask questions such as how many have brown hair? How many are over 120 cm tall? Etc.	2c	3	I can use Clipboard to enter simple queries based on numeric and alphanumeric fields.
Y 4	Interrogate a data file to find the answers to more complex queries	Use Clipboard to enter more complex queries based on numeric and alphanumeric fields, from a data file already set up.	Recommendation: Make good use of whole-group teaching opportunities to put across the logic of and/or queries.	Using a similar survey, set questions such as how many girls are over 120 cm tall? How many pupils have black hair and blue eyes?	2c 2d	3	I can use Clipboard to enter more complex queries based on numeric and alphanumeric fields, from a file that my teacher has set up.
Y 5	Collect and enter data to a database to provide answers to more complex queries.	Add more records to an existing file, followed by formulation of more complex queries	Recommendation: Teach data collection technique, and how this relates to data entry considerations.	Create a whole-class file on a given topic. Possibly share across classes to make a whole-school database.	2c 2d	4	I can add more records to an existing file, then formulate more complex queries.
Y 6	Collect and organise data in order to solve problems.	Design own simple file structure, enter data, and carry out queries.	Recommendation: Ensure that the nature of the problem is understood before any data is collected, and the file structure agreed on.	Each group given/choose a topic for their survey.	2c 2d	5	I can design my own simple file structure, enter data, and carry out queries.

Controlling KS1

	Target Problem	Solution	Teacher's Notes	Examples	PoS	L	I can do IT!
N	Have experience of controllable toys or equipment.	Use TV, remote controlled toy, switch or sound-operated equipment.	Recommendation: Experiment and explore.	Listen to a tape story, use any mouse or keyboard operated program.			I can use the control of a toy or piece of equipment to make it do something.
Y R	Make a piece of equipment carry out a function.	Use remote control, mouse, rollerball, television, Roamer, etc	Recommendation: provide experience of as wide a variety of equipment as possible.	Use mouse or keyboard to control paint or similar program, e.g. Animated Alphabet.	3a 3b	1	I can use remote controls, mouse, rollerballs, TVs, Roamer, etc. to make a machine do what I want it to do.
Y 1	Make a piece of equipment carry out set of actions.	Use Roamer or floor turtle commands to make it follow a previously worked out route	Recommendation: discuss commands as a whole class, then set different challenges to each group	Lay out a maze or street scene, where children make turtle move from one point to another.	3a 3b	2	I can make Roamer or a floor turtle follow a planned route.
Y 2	Make a screen or floor robot trace out simple regular shapes using simplified commands.	Use LOGO commands to draw simple shapes	Recommendation: Use a simplified LOGO with a Concept Keyboard, or shortened keyboard commands.	Create commands such as F (forward 50), L (left 90), R (right 90) for children to use to make simple shapes.	3a 3b	2	I can use LOGO commands to draw simple shapes using procedures my teacher has already entered.

Controlling KS2

	Target Problem	Solution	Teacher's Notes	Examples	PoS	L	I can do IT!
Y 3	Make a screen or floor robot trace out simple regular shapes using degrees of measurement.	Use basic LOGO commands to draw simple shapes	Recommendation: Provide crib sheet with basic commands, including Clear Screen, Forward, Backward, etc.	Produce squares, rectangles, and triangles using forward, backward, left and right commands.	1a	3	I can use LOGO commands to draw simple shapes.
Y 4	Produce sequence of instructions to perform a particular task, e.g. draw given shape.	Use the LOGO editor to store and execute simple linear sequences	Recommendation: Teach the advantages of using the editor so that mistakes can be corrected.	Discuss and plan out sequence of commands, then try out on Roamer or computer, correcting as required.	1a 3a	3	I can use the LOGO editor to store and execute simple linear sequences.
Y 5	Use the REPEAT command to produce short sequences to perform more complex tasks.	Use the LOGO editor to store and execute simple sequences involving REPEAT	Recommendation: Teach the use of REPEAT to avoid typing instructions more than once, and to achieve much longer control sequences.	Use repeat to create procedures for squares, triangles, etc. Then combine to make patterns, e.g. 8 squares at 45-degree steps.	1a 3a 3c 3d	4	I can use the LOGO editor to store and execute simple sequences involving REPEAT.
Y 6	Produce instructions to control lights, buzzers or motors.	Use control program to create and test sequences of instructions.	Recommendation: If an interface box is not available, an on-screen simulation could be used..	Discuss traffic light sequence, then produce program to simulate using interface box.	1a 1b 3a 3b	4	I can use the computer to control (or simulate control of) other equipment.

Modelling KS2

	Target Problem	Solution	Teacher's Notes	Examples	PoS	L	I can do IT!
Y 3	Use IT models or simulations to explore	Use 'adventure' programs and discover rules, e.g. must take X so that we can do Y.	Recommendation: Pupils could work on program, then write up what they need to do next and what they have learned.	Dragon's Eye, Yellow Brick Road, Fletcher's Castle etc.	1a 1b	2	I can solve computer puzzles.
Y 4	Use models to help make decisions	Enter data into a pre-produced spreadsheet	Recommendation: Create spreadsheet with sample data, following whole-class discussion. Get children to vary amounts and discuss results.	Provide a simple spreadsheet e.g. 'Party Costs' and give pupils a fixed amount to spend.	1a 1b	3	I can enter data into a spreadsheet to help me solve a problem.
Y 5	Use models to explore patterns and relationships and make prediction.	Use maths programs e.g. Maths Investigations, Maths with a Story etc.	Recommendation: set problems using "pencil an paper" first, and then use computer version to extend and generalise.	"Tile" program, exploring number of tiles needed to make different sized shapes.	1a 1b 3c 3d	4	I can find patterns and use them to predict answers.
Y 6	Explore effects of changing variables	Use LOGO or various maths programs e.g. SPIRO from SLIMWAM2	Recommendation: Introduce program to whole group and then have cards with different challenges. Children could set each other challenges.	LOGO procedures where values can be changed, e.g. the number and size of angles when drawing a regular shape.	1a 1b 3c 3d	5	I can write procedures that produce shapes with different numbers of sides.

Nursery

	Target Problem	Solution	Teacher's Notes	Examples	PoS	L	I can do IT!
Drafting	Producing child's name or individual letters on the screen and on paper	Use Concept Keyboard (with teacher loading the software), mouse or keyboard	Finding letters on keyboard and matching them to written text	Use to label pictures of themselves or as labels for their trays / pegs			I can write my name or some individual letters on the screen.
Painting	Colouring an existing picture on the screen	Use a mouse with simple painting package such as Picturecraft.	Recommendation: Teach children the correct way to hold and operate a mouse or roller ball	Load picture and fill different parts			I can colour in a picture on the screen using the mouse.
Data Handling	Not applicable						
Controlling	Have experience of controllable toys or equipment.	Use TV, remote controlled toy, switch or sound-operated equipment.	Recommendation: Experiment and explore.	Listen to a tape story, use any mouse or keyboard operated program.			I can use the control of a toy or piece of equipment to make it do something.
Modelling	Not applicable						

Reception

	Target Problem	Solution	Teacher's Notes	Examples	PoS	L	I can do IT!
Drafting	Produce and change text on screen, print the work.	Use Concept Keyboard, mouse or keyboard. Introduce Shift key for capital letters.	Word list and rub-out function on the overlay. Recommendation: keep the sentences very short and choice of words limited.	Type out alphabet, correcting mistakes. Type out sentences such as "Malcolm likes ..."	1a 2a	1	I can write with small letters on the screen. I can write with capital letters on the screen. I can change my writing. I can print out my work with help.
Painting	Painting with different colours	Use simple painting package to select colours with mouse and then free-hand painting	Recommendation: Configure the program to "point and click" rather than "hold and drag", if possible.	Make a picture of "me", "my house", etc.	1a 2a	1	I can paint on the screen using different colours. I can print my picture with help.
Data Handling	Provide experiences in recording collected data and of presenting it in the form of a chart	Enter the data to produce a simple chart and print it out	Recommendation: Input by teacher with children contributing.	Teacher chooses topic. Children put counters in pots to record their favourite, then transfer to program.	1a 2a	1	With help, I can enter some data and make a chart.
Controlling	Make a piece of equipment carry out a function.	Use remote control, mouse, rollerball, television, Roamer, etc	Recommendation: provide experience of as wide a variety of equipment as possible.	Use mouse or keyboard to control paint or similar program, e.g. Animated Alphabet.	3a 3b	1	I can use remote controls, mouse, rollerballs, TVs, Roamer, etc. to make a machine do what I want it to do.
Modelling	Not applicable						

Year 1

	Target Problem	Solution	Teacher's Notes	Examples	PoS	L	I can do IT!
Drafting	Write simple sentences, correct mistakes and print the sentences.	Use a word processor with a word bank on the screen, using the mouse to correct and to print. Use qwerty keyboard to add on words.	Recommendation: Make word bank, using words suggested by the children, and teach children how to click on them to add and delete. Progress to adding in words from keyboard.	Make notes for displays. Make a page for a class book, such as our favourite animals.	1a 2a	1	I can write simple sentences. I can correct my mistakes. I can print out my changed work with help.
Painting	More complex paintings involving shapes and patterns	Use a range of tools, including the symmetry options where available.	Recommendation: Ensure that pictures have been drawn using all the available tools.	Use symmetry tools to draw shapes e.g., butterflies.	1a 2a	1	I can make patterns on the screen using different shapes. I can print my picture with help.
Data Handling	Provide experiences of sorting data, presenting it graphically, and answering questions from charts	Sort data and present more than one form of chart(e.g. bar charts and pictograms), and print for analysis	Recommendation: Introduce as part of whole-group teaching activity.	Each group choose a topic, ask others for their favourites, then enter data and produce charts.	1a 2a	1	With some help, I can sort data and produce more than one form of chart. I can print my chart and answer my teacher's questions about it.
Controlling	Make a piece of equipment carry out set of actions.	Use Roamer or floor turtle commands to make it follow a previously worked out route	Recommendation: discuss commands as a whole class, then set different challenges to each group	Lay out a maze or street scene, where children make turtle move from one point to another.	3a 3b	2	I can make Roamer or a floor turtle follow a planned route.
Modelling	Not applicable						

Year 2

	Target Problem	Solution	Teacher's Notes	Examples	PoS	L	I can do IT!
Drafting	Draft and re-draft simple sentences, saving and loading these between sessions	Use a combination of keyboard and word bank, saving and loading own work. Position cursor to insert or delete any word or words.	More words should be keyed in independently. Recommendation: Discourage use of the rub-out icon unless with the last word typed. Work should be saved regularly.	Could use an existing framework, e.g. "A postcard from holiday", where children fill in the gaps, add punctuation, etc.	1a 2a 2b 2c	2	I can write some sentences and save my work. I can load my work and re-draft my sentences. I can print out my work on my own.
Painting	Paint pictures with straight lines and appropriate regular shapes. Save and retrieve work between sessions.	Use line and shape tools with teacher help to navigate the menus. Use hollow and solid shape tools. Children should be able to find their own work.	Recommendation: Choose a context for the painting which demonstrates the advantages of using these tools. Establish good practice with saving work	Make a geometrical pattern from rectangles, triangles and circles, e.g. a bus or a house - make a Tangram.	1a 2a 2c	2	I can use line and shape tools with my teacher helping me with the menus. I can use hollow and solid shape tools. I can find, load and print my own work.
Data Handling	Look at information in a file to find the answers to simple questions	Use Clipboard or similar to look at information from a data file already set up.	Recommendation: Discuss contents of file and make up set of questions as whole group.	Teacher makes file of pupil data, then sets questions e.g. Who likes ...? Who has blue eyes? Does Andrew like...?	1a 2a	2	I can use Clipboard or a similar program to enter simple queries from a file that has been set up.
Controlling	Make a screen or floor robot trace out simple regular shapes using simplified commands.	Use LOGO commands to draw simple shapes	Recommendation: Use a simplified LOGO with a Concept Keyboard, or shortened keyboard commands.	Create commands such as F (forward 50), L (left 90), R (right 90) for children to use to make simple shapes.	3a 3b	2	I can use LOGO commands to draw simple shapes using procedures my teacher has already entered.
Modelling	Not applicable						

Year 3

	Target Problem	Solution	Teacher's Notes	Examples	PoS	L	I can do IT!
Drafting	Draft and re-draft simple sentences, changing the way the text looks.	Restricted use of word banks. Highlighting words and phrases and adding emphasis (bold, italic, different fonts).	Word banks only for some pupils. Recommendation: Discuss the use of formatting (lay out) to match purpose of writing.	Take short newspaper report and change adjectives, emphasis, etc. to make more forceful.	1a 2a	3	I can use tools like bold and italics to improve my work.
Painting	Integrate small amounts of text with pictures.	Use the text tool in conjunction with those above.	Recommendation: Confine text to simple short labels or captions, e.g. title.	Make a simple greetings card.	1a 1b	2	I can use the text tool to add text to my work.
Data Handling	Interrogate a data file to find the answers to simple queries	Use Clipboard to enter simple queries based on numeric and alphanumeric fields, from a data file already set up.	Recommendation: Make use of large and clear crib-sheets/cards. Ensure results are recorded in some way.	Do a survey of hair and eye colour. Ask questions such as how many have brown hair? How many are over 120 cm tall? Etc.	2c	3	I can use Clipboard to enter simple queries based on numeric and alphanumeric fields.
Controlling	Make a screen or floor robot trace out simple regular shapes using degrees of measurement.	Use basic LOGO commands to draw simple shapes	Recommendation: Provide crib sheet with basic commands, including Clear Screen, Forward, Backward, etc.	Produce squares, rectangles, and triangles using forward, backward, left and right commands.	1a	3	I can use LOGO commands to draw simple shapes.
Modelling	Use IT models or simulations to explore	Use 'adventure' programs and discover rules, e.g. must take X so that we can do Y.	Recommendation: Pupils could work on program, then write up what they need to do next and what they have learned.	Dragon's Eye, Yellow Brick Road, Fletcher's Castle etc.	1a 1b	2	I can solve computer puzzles.

Year 4

	Target Problem	Solution	Teacher's Notes	Examples	PoS	L	I can do IT!
Drafting	Take draft text, proof-read and redraft it as required.	Increased use of cursor positioning and highlighting to make changes to blocks of text.	Recommendation: Use spell check facility if available.	Load a short piece of writing, such as a poem or letter, check for errors and correct them.	1a 1b	3	I can do some more writing with purpose. I can proof-read my work. I can re-draft my work.
Painting	Improve quality of pictures, concentrating on what can be achieved with a computer which cannot be done easily in other ways.	Wide range of drawing tools by navigating the menu system. Re-work saved pictures with the rubber & other tools.	Recommendation: Ensure that children select the appropriate tool for the chosen task e.g. spray tool compared to fill tool. First version should be saved before reworking.	Take existing picture and make changes, such as removing unwanted lines, changing colours.	1a 1b 2a 2b	3	I can use lots of drawing tools using the menus. I can re-work saved pictures using the rubber and other tools.
Data Handling	Interrogate a data file to find the answers to more complex queries	Use Clipboard to enter more complex queries based on numeric and alphanumeric fields, from a data file already set up.	Recommendation: Make good use of whole-group teaching opportunities to put across the logic of and/or queries.	Using a similar survey set questions such as how many girls are over 120 cm tall? How many pupils have black hair and blue eyes?	2c 2d	3	I can use Clipboard to enter more complex queries based on numeric and alphanumeric fields, from a file that my teacher has set up.
Controlling	Produce sequence of instructions to perform a particular task, e.g. draw given shape.	Use the LOGO editor to store and execute simple linear sequences	Recommendation: Teach the advantages of using the editor so those mistakes can be corrected.	Discuss and plan out sequence of commands, then try out on Roamer or computer, correcting as required.	1a 3a	3	I can use the LOGO editor to store and execute simple linear sequences.
Modelling	Use models to help make decisions	Enter data into a pre-produced spreadsheet	Recommendation: Create spreadsheet with sample data, following whole-class discussion. Get children to vary amounts and discuss results.	Provide a simple spreadsheet e.g. 'Party Costs' and give pupils a fixed amount to spend.	1a 1b	3	I can enter data into a spreadsheet to help me solve a problem.

Year 5

	Target Problem	Solution	Teacher's Notes	Examples	PoS	L	I can do IT!
Drafting	Move text from one part of a story to another. Alter appearance of piece to make clearer. Add drawing or picture.	Cutting, copying and pasting, centring and justification.	Recommendation: Layout formatting should not be attempted until the drafting is finished and saved.	Take sequence of instructions and move into correct order.	1a 1b 1d 2a	4	I can cut and paste some text. I can use commands to centre some text. I can add a drawing or picture to my work
Painting	Create more complex pictures through manipulation of simple components	Cut, copy, move and flip tools on small parts of painting to quickly create complex scenes. Repeat patterns.	Recommendation: Ensure that the one element to be manipulated only occupies a small part of the screen to start with.	Make a tiling pattern by using any 4-sided shape, rotating and reflecting and using different colours	1a 1b 2a 2b	4	I can cut and copy and use the move and flip tools on small parts of my painting to quickly create a more complex scene. I can repeat patterns.
Data Handling	Collect and enter data to a database to provide answers to more complex queries.	Add more records to an existing file, followed by formulation of more complex queries	Recommendation: Teach data collection technique, and how this relates to data entry considerations.	Create a whole-class file on a given topic. Possibly share across classes to make a whole-school database.	2c 2d	4	I can add more records to an existing file, then formulate more complex queries.
Controlling	Use the REPEAT command to produce short sequences to perform more complex tasks.	Use the LOGO editor to store and execute simple sequences involving REPEAT	Recommendation: Teach the use of REPEAT to avoid typing instructions more than once, and to achieve much longer control sequences.	Use repeat to create procedures for squares, triangles, etc. Then combine to make patterns.	1a 3a 3c 3d	4	I can use the LOGO editor to store and execute simple sequences involving REPEAT.
Modelling	Use models to explore patterns and relationships and make prediction.	Use maths programs e.g. Maths Investigations, Maths with a Story etc.	Recommendation: set problems using "pencil an paper" first, and then use computer version to extend and generalise.	"Tile" program, exploring number of tiles needed to make different sized shapes	1a 1b 3c 3d	4	I can find patterns and use them to predict answers.

Year 6

	Target Problem	Solution	Teacher's Notes	Examples	PoS	L	I can do IT!
Drafting	Finding and replacing words and phrases. Arrange text into columns.	Use of the find/replace commands, and the tab key. Use of tables if available.	Recommendation: Choose content for writing which involves columns, such as recording observations.	Take a short story and alter the character's name or sex throughout. Record results of survey or experiment in table.	1a 1b 2a	4	I can use the find and replace commands. I can arrange text into columns.
Painting	Improve overall quality of pictures by incorporating some fine detail.	Zooming to re-touch at pixel level.	Pixels are the individual dots that make up a picture.	Produce a free-hand drawing then use zoom to tidy up lines and edges and ensure no gaps at corners.	1a 1b 2a 2b	4	I can use the zoom tool to re-touch my painting pixel by pixel.
Data Handling	Collect and organise data in order to solve problems.	Design own simple file structure, enter data, and carry out queries.	Recommendation: Ensure that the nature of the problem is understood before any data is collected, and the file structure agreed on.	Each group given/choose a topic for their survey.	2c 2d	5	I can design my own simple file structure, enter data, and carry out queries.
Controlling	Produce instructions to control lights, buzzers or motors.	Use control program to create and test sequences of instructions.	Recommendation: If an interface box is not available, an on-screen simulation could be used.	Discuss traffic light sequence, then produce program to simulate using interface box.	1a 1b 3a 3b	4	I can use the computer to control (or simulate control of) other equipment.
Modelling	Explore effects of changing variables	Use LOGO or various maths programs e.g. SPIRO from SLIMWAM2	Recommendation: Introduce program to whole group and then have cards with different challenges. Children could set each other challenges.	LOGO procedures where values can be changed, e.g. the number and size of angles when drawing a regular shape.	1a 1b 3c 3d	5	I can write procedures that produce shapes with different numbers of sides.