

KS1

Computing

TEACHING
PACK



- Includes 25 supporting resources
- Features opportunities for application, analysis, synthesis and evaluation
- Designed for the non-specialist teacher

Contents

Finding your way around the curriculum pack	ii
Curriculum coverage and mapping	iv

Section 1: Algorithms – instructions

Teaching ideas.....	1
Resources listing	5
Resource printouts.....	6

Section 2: Programing – bugs and debugging

Teaching ideas.....	13
Resource listing	19
Resource printouts.....	20

Section 3: Programming a game – planning and predicting

Teaching ideas.....	25
Resource listing	30
Resource printouts.....	31

Section 4: Data – creating, storing, retrieving and editing multimedia

Teaching ideas.....	45
Resource listing	47
Resource printouts.....	48

Section 5: IT in the world around us

Teaching ideas.....	50
Resource listing	53
Resource printouts.....	54

Section 6: E-safety

Teaching ideas.....	62
Resource listing	64
Resource printouts.....	65

Finding your way around the curriculum pack

This pack is intended to introduce children in Key stage 1 to computing. It is presented in 6 sections, each supported by a variety of teaching suggestions and resources. It can be used as a structured sequence of lessons or as a collection of ideas and resources for the teacher to dip into as and when appropriate. The pack contains many activities and short programmes that use [Scratch](#), which is a freely available platform designed for use within educational facilities and at home.

For the Scratch programming sessions you can use the 'offline' version of Scratch ([Scratch 2](#) or [Scratch 1.4](#) which is suitable for older computers) or the online version on the Scratch website. To familiarise yourself and to introduce children to Scratch download the simple '[Getting started with Scratch](#)' guide, which provides:

- an introduction to creating a sprite – a simple figure which you can animate
- a set of instructions of how to add sounds and actions and to change the appearance of a sprite
- a guide to creating a simple algorithm which will repeat any of the actions as a start to simple programming.

There are 6 key areas covered in this pack:

- **Algorithms** – instructions
- **Programming** – bugs and debugging
- **Programming a game** – planning and predicting
- **Data** – creating, storing, retrieving and editing multimedia
- **IT in the world around us**
- **E-safety.**

Sections comprise:

- **Starter** – 5/10 minutes activity to introduce a concept and consolidate on pre-learning skills and knowledge
- **Main lesson** – structured activity lasting around 30 minutes to establish core learning outcomes
- **Plenary** – to consolidate the learning and offer AFL opportunities
- **Extension** – ideas for those with a greater pre-learning level and also to stretch those who meet the main learning outcomes.

Within each section the key skills of Knowledge & Comprehension, Application, Analysis, Synthesis and Evaluation are identified.

We've included links to each separate resource referenced in the pack so that you can access the resources directly on www.teachitprimary.co.uk. We've also included the file number for each original resource – just pop this into Teachit Primary's search engine to find the resource via the website. Lots of the resources in this pack are Word documents, but we've also included links to PowerPoints. Please log in first in order to access any of these resources on Teachit Primary.

We hope you enjoy using this pack. If you have any questions, please get in touch: email support@teachit.co.uk or call us on 01225 788851. Alternatively, you might like to give some feedback for other Teachit Primary members – you can do this by adding a comment on the page on Teachit Primary (please log in to access this).

Curriculum coverage and mapping

Activities in this teaching pack meet the following requirements in the 2014 National Curriculum.

Key stage 1: Computing

Statutory requirements

Pupils should be taught to:

1. understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions
2. create and debug simple programs
3. use logical reasoning to predict the behaviour of simple programs
4. use technology purposefully to create, organise, store, manipulate and retrieve digital content
5. recognise common uses of information technology beyond school
6. use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies.

Statutory requirements as set out above and where they are addressed in the pack:

Chapter	Areas covered
Session 1:	Algorithms - instructions 1
Session 2:	Programming – bugs and debugging 2
Session 3:	Programming a game – planning and predicting 2 & 3
Session 4:	Data – creating, storing, retrieving and editing multimedia 4
Session 5:	IT in the world around us 5
Session 6:	E-safety 6

Section 5: IT in the world around us

(Statutory requirements covered: 5)

Purpose: This section is intended to make children familiar with the idea that many everyday objects contain computers to make them work. Also that these computers, even those contained within very small simple devices, require algorithms to make them work.

Starter:

Knowledge & Comprehension:

- Present children with a collection of images that show a variety of different uses of technology from the world around us. This could include: the internet, shop tills, barcodes on packaging, CCTV cameras, Skype, On Demand television, automated book checkers at the library, cars, buses, planes, washing machines, mobile phones – the list is endless! Ask children to name the devices and to suggest how they help us. [Resource 25049: Technology and its uses](#) provides a set of arrow cards that children can use to link the technology to how they are helpful in the modern world.

Application:

- Ask the children to come up with examples of technologies they are familiar with from home and in the classroom. Record suggestions as two lists; those from home and those in school, writing down each acceptable suggestion on a 'post-it' note. Using two sorting hoops create a Venn diagram to identify any that are used both at home and in school.
- Looking at a selection of the technologies discussed, ask children to consider why they think technology has advanced. Why do we need each of these devices? Ask children to rank each of the examples as those we could manage without and those we couldn't – get ready for some heated discussions

Main lesson:

Analysis:

- Provide children with a set of images and/or actual everyday objects, some of which require a computer to work and others which do not. Ask the children to decide which of the items require a computer and hence an algorithm to work, and which do not. Include examples that require electricity but not necessarily a computer for example a battery operated pencil sharpener does not have a computer inside it but an electronic toothbrush

will. [Resource 25058: Computer inside or not?](#) gives a useful set of images to facilitate the activity.

Synthesis:

- Take an everyday classroom object such as a calculator and ask the children to verbally explain how you should operate it. Challenge the children to be very clear and direct in their instructions to create a set of operator instructions. Record the instructions on a whiteboard for the class to review by looking for gaps and sequencing errors. Present the children with an image of an everyday object that requires a computer for it to work. Explain that they are going to write a set of operating instructions for the object. If possible, check by using the instructions to operate the object or ask for children to peer assess each other's work to spot errors. [Resource 25120: How to use a ...](#) provides a simple template for children to record their instructions.

Plenary:

Evaluation:

- Ask children to think of the different types of jobs technology can do for us. Ask them to suggest the benefits that the technology has over doing it for ourselves. For example a washing machine takes less time, is not tiring for the user to use and cleans clothes more efficiently. Look at several examples to establish the key drivers for technological advance: time saving, efficiency, solutions to problems etc.

Extension:

- Ask children to think of a job that a computer could do to save time e.g. an intelligent vacuum cleaner that can get up and down stairs and knows when the floors need cleaning! Get children to use [resource 25059: Designing for the future](#) to present their idea, including a set of instructions as to how it may work.

Resources contained within Section 5

25049 Technology and its uses	54
25058 Inside a computer or not?	58
25120 How to use a	60
25059 Designing for the future	61

Teachit sample

Teacher notes: Cut out each of the arrow cards. Hand out the cards to the children. The first child shows the rest of the group the picture of the technology on their card. The rest of the children read the descriptions on their cards to see if it matches the picture being shown. If it does, they read the description out loud and show the next picture on their card. Repeat until every child has read the description and shown the picture on their card. There are 15 picture cards in total.

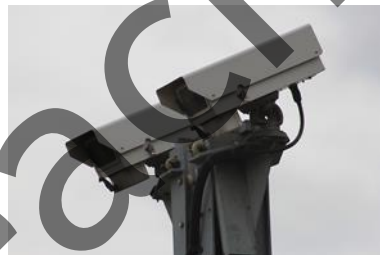
Allows energy from the sun to be used to make electricity.



Stops the traffic to allow people to cross the road safely.



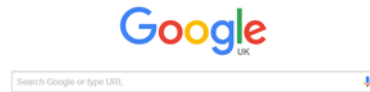
Allows a computer to read the price of an item in a shop or supermarket.



Films people in towns and cities to make sure everyone is safe.



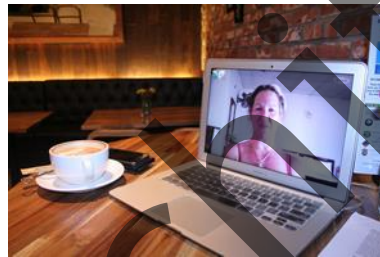
Shows the speed at which a car is travelling.



Allows you to search the internet for information.



Allows you to talk to people, take pictures, play games and use the internet.



Allows you to see a video of the person you are talking to anywhere in the world.



Allows you to
take money out
of your bank
account.



Turns the
television on/off
and changes
channels from a
distance.



© Chris Kelly 2010 <https://flic.kr/p/8ohnDY>

Speeds up the
cooking of food.



Sounds an alarm
if smoke is
detected.



Uses graphics and sounds to create virtual games.



© Raymond Shobe 2008 <https://flic.kr/p/4koKvS>

Keeps food stored at low temperatures.



Allows moving images and sounds to be transmitted into people's homes.



Name:

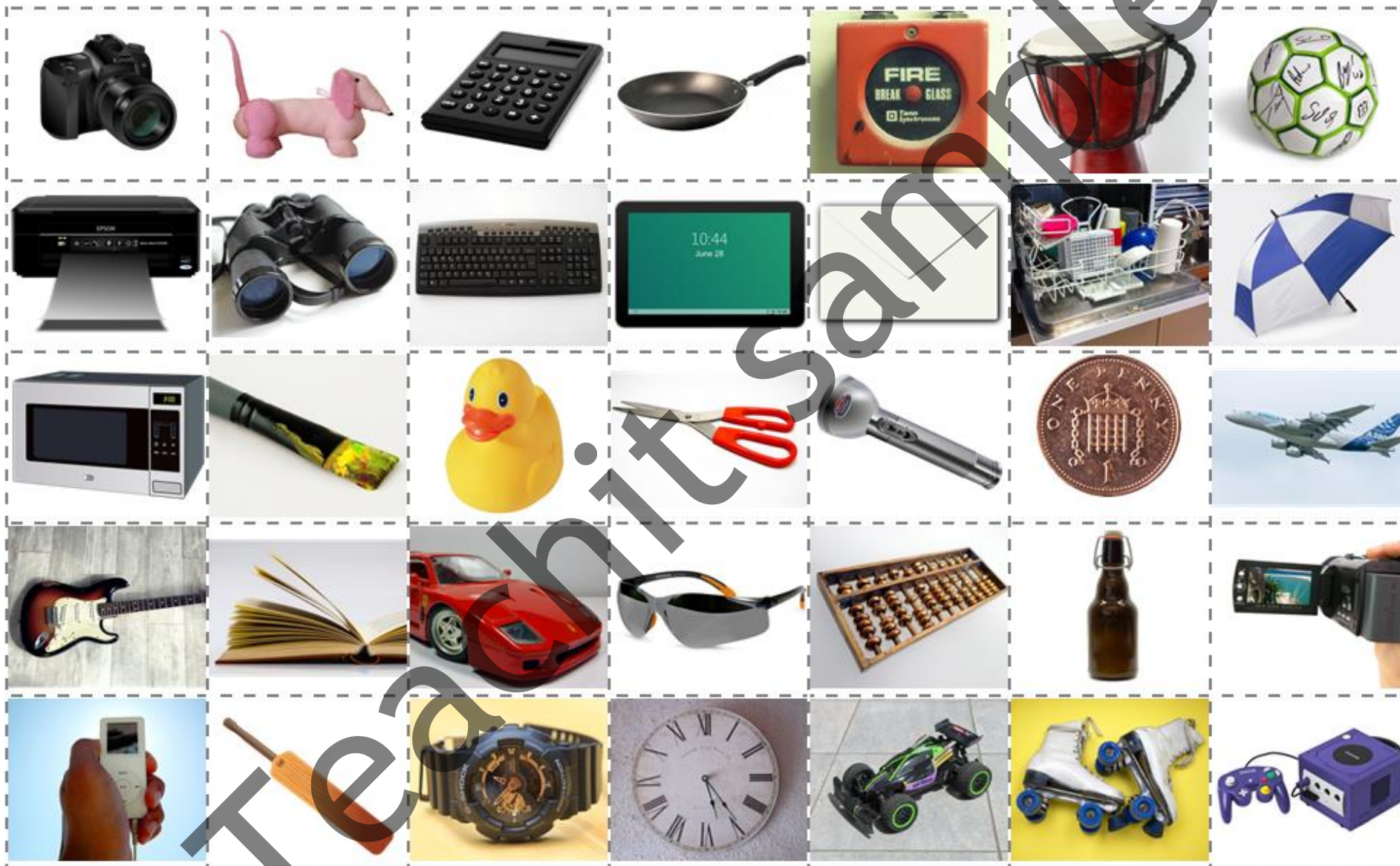
Date:

Cut out the pictures of the objects and sort them into those that have a chip (a small computer) inside and those that do not!

Has a computer chip inside	Does not have a computer chip inside



Cut out the images of the objects and sort and stick them onto the table.



Zog has just landed on Earth.

He is struggling to get to grips with some of the technology we have.

Write sets of instructions to help him use each of the devices.

Remember to use imperative (bossy) language and to sequence your



How to use a toaster

.....

.....

.....

.....

.....

.....

.....

.....



How to use a washing machine

.....

.....

.....

.....

.....

.....

.....

.....



How to use a vacuum cleaner

.....

.....

.....

.....

.....

.....

.....

.....



Name: Date:

Think of a device that would save both time and effort. It could be something for around the home or at school. It could be something to make your life easier or something to help someone else.

Perhaps a vacuum cleaner that knows when the floors need cleaning or a robot to tidy your room!



What is the name of your technology?			
What does your technology do?			
List a set of operating instructions to tell the users how to make the machine work.	Draw a picture of your design, including labels of special features.		What instructions do you think your device will need?