Unit 1F: Understanding instructions and making things happen

About this Unit:

In this unit children learn how to give and follow instructions to make things happen. They learn how to sequence instructions, so that others can follow them, and to predict what will happen.

Children learn that machines follow instructions and that they need to be switched on and off, and controlled. They will recognise the need for accuracy, definition, and common language.

Children will apply what they have learnt in this unit when giving instructions both written and verbal. The unit will also help them understand how everyday appliances operate.

Where this Unit fits in:

This unit assumes that children:

- are aware of simple switches in household appliances
- understand the terms on and off
- understand directional language such as forward, left, backward, turn
- can count.

Vocabulary:

Order | Instruction | Sequence | Backspace | Turn

Resources:

Tape recorder | Battery-operated toys | Remote-controlled toy | Cards showing each stage in a recipe

Expectations: at the end of this unit,

Most pupils will be able to: read a set of instructions and usually predict the correct outcome; produce an accurate set of instructions for others to follow

Some pupils will only be able to: read a set of instructions and sometimes predict the correct outcome; produce instructions but sequence them incorrectly or make assumptions

Some pupils will also be able to: read a set of instructions and predict the correct outcome; produce an accurate set of instructions using standardised measurements and agreed language

These units have been adapted from material available on the QCA Schemes of Work website

Learning Objectives *Pupils should learn…*	**Possible Activities**	**Learning Outcomes** *Pupils can…*	**Consider**
Setting the Scene			
• **key idea:** that machines and devices must be controlled.	• Discuss with the class the technology that they see or use, e.g. televisions, video recorders, microwaves, washing machines, toys, traffic lights, supermarket checkouts. Explain how this equipment is operated, eg by pressing on/off buttons, turning dials, remote control. • Show the class some battery-operated toys. Ask the children to draw pictures of the toys and to label the switch and battery compartment. Cut pictures of similar equipment from magazines to make a display and ask the children to group them into categories, eg where they are found or how they are controlled.	• Recognise that machines and devices have to be controlled.	
Short Focused Tasks			
• **key idea:** that machines and devices can be controlled by a sequence of physical actions.	• Use a tape recorder, with the children, to record sounds. Show the children how the tape recorder buttons are used in the correct sequence to record and play back sound. Divide the class into small groups, give them a simple diagram of a tape recorder and ask them to record some sounds. Ask them to label the buttons on the diagram and write down the order in which they are pressed.	• Recognise that some machines and devices work by using a sequence of physical actions.	• This activity could be linked to the previous one by discussing the order in which a video recorder is programmed or the order in which the washing is done. • Children who find this activity difficult could be given a labelled diagram and just asked to produce the correct sequence.

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Learning Objectives *Pupils should learn…*	**Possible Activities**	**Learning Outcomes** *Pupils can…*	**Consider**
Short Focused Tasks (Cont.)			
• **key idea:** that sequence affects outcome. • **technique:** to put activities into the correct order.	• Give children a set of cards showing pictures of the stages in a recipe to make sweets. Ask the children to identify the correct sequence by putting the cards in order. Talk about what might happen if the correct order is not followed. Ask them to think of other cases where it is important to carry out instructions in the correct order, *e.g. driving a car, building a model.* Discuss cases where order is not important, *e.g. putting the toppings on a pizza.*	• Put instructions in the correct sequence to achieve the correct results.	• Children could use the recipe to make the sweets at home. • This activity offers opportunity to ask 'what .. if' questions, *e.g. what happens if the chocolate or butter is left for ten minutes after it has melted*? It is important that children discuss the effects of incorrect sequencing.
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Learning Objectives *Pupils should learn…*	**Possible Activities**	**Learning Outcomes** *Pupils can…*	**Consider**
Short Focused Tasks (Cont.)			
• **key idea:** that instructions can be given using a common language. • **technique:** to use directional language to 'control' someone else's actions.	• During a PE lesson give children instructions using simple directional language, such as forward, backward, left and right. Start with single instructions that children react to immediately and move to short sequences that children act upon after hearing the whole set of instructions. They will not need units, such as paces or degree of turn, to start. • Discuss what happens when children start from different positions, facing different directions. Point out that how they respond to the instructions depends on the way there are positioned. Divide the class into groups and ask them to give each other instructions. This might be to go around some obstacles or to reach a certain place. Allow them to use comparative language, such as 'a bit further'. Discuss length of pace and degree of turn at this stage.	• Give instructions in a common language.	• At this point measurable units are not important but you should discuss 'how far' and 'how many'. • Some children will find the concept of relative geometry (that forward means different things depending on which way you are facing) difficult and will need repeated practice.
• **key idea:** that instructions can include measurable units in a common language. • technique**:** to use unit lengths and a common language, *e.g. repeat and stop.*	• Repeat the previous activity with more emphasis on units of numerical value that convey distance or turn, *e.g. two steps forward.* Introduce the idea of repetition, *e.g. 'do that twice'.* Talk to the children about how people interpret 'two steps forward' in different ways depending on their step size, and discuss how turns might be measured. Then discuss with the class the importance of standardising both the unit size and the language for giving instructions.	• Recognise the importance of uniformity of instructions and measurement. • Recognise the importance of precision in instructions.	• Compare your step length with that of the children to demonstrate that the same set of instructions would result in a different outcome. • The class could be told that traditionally body lengths were used and that these were not standard or fair. This could lead to a discussion of the need for standard units.

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Learning Objectives *Pupils should learn…*	**Possible Activities**	**Learning Outcomes** *Pupils can…*	**Consider**
Short Focused Tasks (Cont.)			
• **key idea:** that instructions can be recorded for replication and amendment. • **technique:** to record a sequence of instructions in a common format.	• Explain how to write down a set of instructions to move someone from one place to another. Ask the children to write down their instructions. Initially, allow children to choose their own method of recording based on the language and units used in the previous lesson. Ask children to find a partner to carry out the written instructions and to report back on the result. Discuss ways of standardising the unit lengths and recording methods *e.g. using cards with symbols such as 'F', or a red arrow, for forward.* Ask the children to rewrite their instructions, including any amendments, using a new agreed method of recording.	• Write a sequence of instructions for others to carry out. • Write instructions in an agreed format using standardised unit lengths.	• Children might misinterpret instructions and measure units incorrectly at this stage.
• **key idea:** that results can be predicted and that predictions can be tested. • **technique:** to read a set of instructions, predict the result and follow the instructions to test their prediction.	• Use the methods from the previous lesson to prepare three or four sets of instructions for moving about the class, starting at particular places and facing particular directions. Give the instructions to the children and ask them to predict where the instructions will take them. Allow the children to follow the instructions to confirm or deny their predictions.	• Predict the outcome of a set of instructions and test the results.	• Children may not test their prediction but assume that they have guessed correctly. • Two sets of instructions, starting at different places, but ending at the same place, or starting at the same place but facing different directions, could be produced. This will remind children about the importance of the start position.

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Learning Objectives Pupils should learn…	**Possible Activities**	**Learning Outcomes** *Pupils can…*	**Consider**
Assessment Task			
• that recording a sequence of instructions forms the basis of control work.	• Choose three areas of the classroom, *e.g. teacher's desk, reading area and coat area.* Ask the children to write a set of instructions to get to each of these areas from their own seats. Tell the class that the instructions should be written in the agreed format and that they will need to check for accuracy. Ask children to write on their instructions where they will lead to and get them to place their instructions in a box. Ask each child to choose a set of instructions. Ask them to work out who the instructions came from by working backwards from the area chosen. Let them test their predictions.	• Write sets of instructions and interpret them correctly, and make and test predictions.	• Children will need to know that they are following the instructions backwards and that they will get the correct result by trial and error, not by guessing. The game could be called 'who am I?

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