



Unit: Robotic Toys

ICT Year 2

Overview of this Unit:

Children learn how to create, test, modify and store instructions to control the movements of a floor robot. They learn to programme the floor robot to move around an area by using single instructions, a sequence of instructions and repeated sequences. They will pre-plan a journey for a robotic toy and understand the need for instructions to be sequenced for more complicated tasks. They can enter a sequence of instructions, predict and test their results and amend the instructions after testing. They will begin to transfer the skills learnt to a screen turtle using relevant software and talk about right angle turns being 90 degrees. They can save their work with assistance and work cooperatively to solve problems and can plan and create their own activities for robotic toys.

Expectations at the end of this unit:

Most pupils will be able to: produce an accurate set of instructions to move a robotic toy to complete a task but will need to amend the instructions to make them correct. They can combine movements into one by adding units together and accurately predict the results of a set of instructions. They can work cooperatively with others.

Some pupils will only be able to: produce a set of instructions but make mistakes with directions and distances and incorrectly predict or guess the results of a set of instructions.

Some pupils will also be able to: produce an accurate set of instructions with little need for amendment, incorporate instructions that involve a difficult sequence accurately predicting the results. They can work cooperatively to solve problems and can record their instructions. They can transfer their knowledge and skills to a screen turtle program on the computer.

KEY:

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| Personal and Social Development, Well-Being and Cultural Diversity (PSDWBCD) | Welsh Language Development (WLD) | Creative Development (CD) |
| Language, Literacy and Communication Skills (LLC) | Knowledge and Understanding of the World (KUW) | Outdoor Play (OP) |
| Mathematical Development (MD) | Physical Development (PD) | Role Play (RP) |

Teacher Assessment: The skills demonstrated by the children should form part of continuous assessment. Tracking and recording pupils' progress should be done in line with the schools assessment policy and used to inform future planning. Recording sheets are provided for schools as an optional part of this Scheme of work.








Year 2 Find and Analyse Information

Robotic Toys

| ICT Skills | Areas of Learning | Suggested Activity | Vocabulary | Resources | Skills across the Curriculum |
|---|--|--|--|---|------------------------------|
| Can pre-plan a journey for a robotic toy. | PSEWBCD LL MD KUW | <p>Ask the children how a Robotic toy 'knows' where to go. Explain that it is following a set of instructions (<i>This could be demonstrated by moving an obstacle into its path.</i>) Invite the children to talk about devices in everyday life which are programmed to follow instructions, e.g. <i>washing machines, microwaves, cash point machines etc.</i></p> <p>Program a Robotic toy to follow a path through a set of obstacles placed on the classroom floor. Enter Commands one at a time talking about estimating distance and predicting where to make turns. Ask the children if they can remember the set of Commands used and program them into the Robotic toy as one planned journey. Run the program as one journey through the obstacles. Discuss and plan different ways to move through the obstacles and different methods of recording the journey. Make notes of the Commands and repeat the journey to test the plan. Stress the importance to 'Clear' the memory of the Robotic toy at the start of the program.</p> <p>Explain to the children that they will program the Robotic Toy to follow instructions to move around a play mat, board, obstacle course or to</p> | Robotic toy Obstacle Predict Estimate Plan Forward Back Right turn Left turn Pause Clear | Programmable Robotic toy Obstacles Pictures Paper & pens Prepared arrow cards Magnetic board | |

| ICT Skills | Areas of Learning | Suggested Activity | Vocabulary | Resources | Skills across the Curriculum |
|------------|-------------------|--|------------|-----------|------------------------------|
| | | <p>re-sequence a story. (<i>The Three Little Pigs, Little Red Hen etc.</i>) Ask the children to 'Clear memory' then move the Robotic toy in single Commands, building up their journey encouraging them to consider and estimate distance. Enter their instructions. Place objects in front of, behind and to the left and right of the Robotic Toy. Initially objects should be placed so that children only have to give two or three instructions for the robotic Toy to get to them.</p> <p>Explain that the Robotic Toy has no eyes and that it will need to be told how many paces to travel.</p> <p>Ask the children to predict the instruction which will make the Robotic Toy move to each object. Encourage them to use units bigger than one or two and limit the number of instructions required.</p> <p>Ask the children to take turns to enter instructions and check their predictions.</p> | | | |

| ICT Skills | Areas of Learning | Suggested Activity | Vocabulary | Resources | Skills across the Curriculum |
|--|---|--|----------------------|--|---|
| <p>Can understand the need for instructions to be sequenced for more complicated tasks and amend a sequence of instructions after testing.</p> <p>They can enter single instructions, a sequence of instructions and repeated sequences.</p> |  | <p>Explain how to write down a set of instructions to move someone from one place to another.</p> <p>Instruction wands made from Multilink cubes could be used to direct each other through a sequence of movements.</p> <p>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.</p> <p>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 <i>e.g. using cards with symbols such as 'F', or a red arrow, for forward.</i></p> <p>Ask the children to rewrite their instructions, including any amendments, using a new agreed method of recording.</p> | <p>Instructions</p> | <p>Robotic toy</p> |  |
| <p>Begin to transfer skills from a Robotic Toy to move a turtle on screen.</p> |  | <p>Children transfer their knowledge and skills with a Robotic Toy to move a screen turtle for a specific task using appropriate software. Take the caterpillar around a grid to eat different foods, move the turtle around the screen avoiding certain objects in a maze etc.</p> <p>The children should be encouraged to save their work and play them back to share with others.</p> | <p>Screen turtle</p> | <p>Screen turtle software Robotic Toys</p> |   |