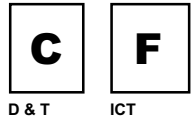


ICT ACTIVITY 14

Using Lego Dacta to control a model of the Millennium Wheel.

Year Group: Year 5



Resources

Lego Dacta Kit, computer, crib sheet, straw construction kit, card, scissors & glue.

Context (Pupils' prior experience)

Pupils will have researched things that are controlled by computer in their home, school and local area. They will have designed and made toys with moving mechanisms as part of their design technology topic work. They will have visited a toy museum or exhibition to extend research.

Task Description

Pupils will carry out some research on 'things' that are controlled by computers. They will be introduced to 'Lego Dacta' as a resource for controlling mechanical toys using lights, buzzers and motors. They will use individual commands to activate these devices. Pupils will design and make a model of the Millennium Wheel using construction straws or card. They will develop a sequence of commands to control movement, speed and direction of the motor device. Pupils will attach the motor to the wheel and then run their sequence of instructions. They will test and modify their designs and sequence of instructions.

Learning Intentions

D & T: Knowledge and Understanding	ICT: Skills, Knowledge and Understanding	ICT Level		
		KS1	KS2	KS3
Design a 'Millennium Wheel' thinking about parts that move, light up and make sounds. Use tools with some accuracy to make a model wheel out of card or construction straws. Test their wheel to see if it turns. Talk about what happens.	Begin to recognise how a computer can control a toy, eg, remote controlled car. With support use individual instructions to turn lights, buzzers and motors on and off. Use screen buttons to change the speed and direction of the motor to control a model wheel.	w/1	2/3	4/5
Use knowledge of fairground rides when developing a design for a Millennium Wheel. Make sketches labelling the parts that move, light up or make sounds. Use a range of tools to make a model out of card or construction straws. Test and refine some design ideas.	Talk about how computers can be used to control devices at home and school. Use a range of individual instructions to control lights, buzzers and motors. Begin to develop a basic sequence of instructions to control a model wheel.	1/2	3/4	5/6
Use knowledge of mechanisms when designing a Millennium Wheel. Make detailed sketches annotating parts that move, light up or make a sound. Select and use tools effectively to make a model. Test the model, refining and adapting their original design.	Understand how computers can control devices in a range of contexts. To begin with, use individual instructions to control devices. Then develop a sequence of instructions, testing and refining ideas to control a model wheel.	2/3	4/5	6/7
D & T POS related to task: 1b, 2a, 3a, 4c, 5c.	ICT POS related to task: 2b, 4a, 5c.			

Teaching Approach

Whole class introduction to 'things controlled by computers'. Small group work (depending on number of kits), usually 2 pupils to a computer/kit. Mixed ability groups for entering single instructions. Set ability groups for supporting or extending ideas for testing and refining sequences of instructions.

Links with other curriculum areas

Science – Forces and movement

Literacy – writing instructions to make things happen.

Subject Learning Gains (Design and Technology)

This activity provided a challenging but realistic context where pupils needed to create a 'working' model of a millenium wheel which would not fall apart when connected to a motor and rotated to simulate a moving wheel.



The pupil was very capable when entering single instructions. He developed his ideas well and created a workable procedure.

He has reached ICT Level 4.

Teachers' Assessment

Pupils' Work

MY PLANNING SHEET

<p>A SKETCH OF MY Wheel</p>	<p>I WANT MY Wheel TO...</p> <p>turn when it stops have lots of lights Not to fall in the water or get stuck with it and be slow when it starts.</p>
<p>HOW I MADE MY Wheel</p> <p>We made it out of straw and it was too heavy so we made it out of card board.</p>	<p>I WILL NEED...</p> <p>card electricity bluebark mouse glue mouse scissors key board paper batter light conductive computer</p>

DATE 26/12/11

My Wheel Design

Date 16/11/11

Name _____

MY PROCEDURE PLAN

<p>MY PLAN FOR CONTROLLING THE Wheel</p> <p>to motion to stop to start to stop power is it off to start other way to stop</p>	<p>SOME USEFUL COMMANDS</p> <p>motor on do set power a</p>
<p>NAME _____</p>	<p>MY PROCEDURE</p> <p>to dizzy to motion to motion motor on set power a set power a set power a</p>

DATE 26/12/11

MY EVALUATION SHEET

<p>MY PROGRAMME</p> <p>made the wheel turn and make it light up and make noises.</p>	<p>THINGS I FOUND HARD / EASY</p> <p>building was easy comands were abit hard</p>
<p>WHAT HAPPENED?</p> <p>We builded a wheel then we made it light by the computer then we typed in the comands then we did some writing then we did some more comands</p>	<p>NEXT TIME I WILL...</p> <p>make it smaller give it more comands make it turn easier</p>

DATE 26/12/11

Pupils' Evaluation

Teachers' Evaluation

ICT Teacher Evaluation

Teacher _____ Date of Activity _____
Class _____

Teacher Confidence and Competence
What was your own level of ICT confidence before the activity?
Not worked with Lego Dacta before.
Do you feel you have gained in confidence and why?
Yes, I feel that I could now lead an IT lesson with this resource.
Do you feel able to teach the lesson yourself?
Yes
Is there anything you wished to have learnt but did not?
I would like to have more experience with the temperature sensor to support the Science.
What would you do differently next time you carry out the task with a class?
I would like to use this resource in other curriculum areas.

Pupils Confidence and Competence
Did the pupils learn what you expected?
Yes and more
Were there any unexpected learning outcomes?
The pupils adapt well to the computer programing language.
Did the pupil complete the task?
Yes
Was it a suitable task for the pupils age/abilities?
Yes, pupils were able to access this programme at different levels including extending their own learning.

Hardware and Software Issues
What hardware or software problems did you experience?
The computer crashed several times and the children lost some of their work.
Would you like further training on how to use either of these?
Yes temperature sensors for Science and Geography.
Were there any resources issues?
Only having two kits, which meant working in smaller groups, thus making the task long term.
Are there any other comments?
Looking forward to using this resource now, with confidence.