

# CRACKING IDEAS<sup>®</sup>

## Get Cracking!



### ONE HOUR LESSON TO ENCOURAGE INNOVATION

A LESSON PLAN FOR YEAR FIVE OR SIX

#### CONTENTS

- 01 Learning context
- 02 Curriculum links
- 03 Teaching the unit

- 06 Resources
- 07 Strategy cards



## NOTES...

# LEARNING CONTEXT

This lesson is designed to introduce children to the concept of innovation. It highlights ways in which they might use innovation in their everyday lives and gives them the opportunity to consider how some household products may have been designed.

## Key Questions

- What is innovation?
- How does innovation come about?

## Learning objectives

- For pupils to understand that innovation is an idea turned into a working solution that meets a real need

## Learning outcomes

### At the end of this lesson most pupils will be able to

- Identify some problems that might provide the opportunity for innovation
- Suggest ways to proceed when attempting to solve a problem

### Some pupils will not have made so much progress and will be able to

- Name some practical problems that they have encountered
- With support, suggest ways to proceed when attempting to solve a problem

### Some pupils will have progressed further and will be able to

- Identify a practical need that can be fulfilled by design, and innovate an appropriate solution



## NOTES...

# CURRICULUM LINKS

## Developing, planning and communicating ideas

### 1. Pupils should be taught to:

a generate ideas for products after thinking about who will use them and what they will be used for, using information from a number of sources, including ICT-based sources

## Working with tools, equipment, materials and components to make quality products

### 2. Pupils should be taught to

b suggest alternative ways of making their product, if first attempts fail

## Evaluating processes and products

### 3. Pupils should be taught to:

a reflect on the progress of their work as they design and make, identifying ways they could improve their products

c recognise that the quality of a product depends on how well it is made and how well it meets its intended purpose



## NOTES...

# TEACHING THE UNIT

### Whole class work

Explain to the class that during the lesson, they will be learning about innovation.

- Take the class to the school hall or playground

### Small group work

Divide the children into groups of five and give each group a football. Explain the rules of the challenge:

- The ball must touch every hand in the group
- It must touch no more than one hand at any time
- The winning group will be the one which completes the challenge in the fastest time

Give the children a few minutes to come up with a solution (most groups will decide to pass the ball from one hand to the other around a circle). Time a group with a stopwatch and then ask the children if they can think of any ways to complete the challenge in a faster time. You can give a few hints if necessary.

Possible solutions are to all crouch around a stationary ball and touch it with fingertips in quick succession or make a slope out of hands and roll the ball down.

Time the new solutions and return to the classroom.



## NOTES...

# TEACHING THE UNIT CONTINUED

## Whole class work

Explain to the children that innovation is the process of making improvements by introducing something that is new and ask them to explain how they were innovating during the last task.

If any groups took their inspiration from other groups, now might be an opportunity to discuss intellectual property.

Explain that they will now create a different innovation and present the following scenario.

*Imagine that your pet cat/dog/snake has escaped from your home. You have looked in all the obvious places, around the bins, under the bushes, under all the parked cars but you still have no luck. Sadly, you head back home but suddenly hear a distressed mewing/whining/hissing and head towards the sound. You see a drain pipe with your pet trapped inside, just too far to be reached.*

Show the children a tube made from a large piece of card rolled into a cylinder about 20cm in diameter, with a small soft toy cat/dog/snake at the bottom. The tube should be long enough so that the children cannot reach the toy. You can decide whether the animal should have a collar.

## Paired work

Ask the children to create a device to lift the animal out of the drainpipe. Divide the children into pairs.

Present the children with a range of materials they might use (wooden sticks, string, card, plastic spoons, etc.)

### Agree on the following rules:

- The device must be able to rescue the animal without injuring it
- The drainpipe must not be damaged
- Devices must only be tested at the proper 'rescue time'
- You will only have 20 minutes to create your solution

Decide if you will allow the pet to be animate (you can simulate the animals movements by moving it with a stick).



## NOTES...

# TEACHING THE UNIT CONTINUED

To make the activity more challenging, you can stipulate that the children must stand a 'safe' distance away from the drain pipe.

After the allocated time allow the children to come and test their devices and comment on their success (self assessment).

### Possible solutions include:

- Two long handles with padded scoops on the ends
- A 'grabber' type device operated by strings
- A device that hooks onto the pet's collar or ribbon (with or without a pulley)
- A device that moves a sling under the pet
- A ladder that enables the pet to climb out (if animate)
- A cage with a drop-down hatch on a rope (if animate)

### Plenary

Recap the definition of innovation.

- How have you been innovating today?

Explain that you are going to show the children some examples of everyday products that have been created as a response to everyday problems like this.

Give out copies of the resource sheet and ask children to read through it.

Explain that these products were created as a response to problems that arose in everyday life and that these inventors were able to create a career for themselves (as well as lots of jobs for other people) from these innovations.

Ask the children to brainstorm problems that occur in their everyday lives that could present opportunities for innovation. Write these suggestions on the board.

### Finish with the following speculation:

I wonder if there is anyone in this room who will make their own career by finding innovative solutions to problems like these.

# RESOURCES



Hour lesson to encourage innovation	Stimulus materials	Consumable materials
	Use of hall or playground	materials for constructing rescue devices e.g.
	Footballs	wooden sticks
	Cardboard tube (approx 20cm diameter and 1m high)	plastic cups
	Soft toy: cat/dog or other pet	plastic spoons
	Inventor's resource sheets	string
		sticky tape
		strong card
		foam rubber
		felt
		glue
		pipe cleaners
		clothes pegs
		elastic bands
		bulldog clips
		paper clips and fasteners
		wire

### Problem

- A toddler spills a cup of black currant juice over a friend's carpet

### Solution

- Mandy Haberman designed the Anywayup cup which has a special valve in the spout to stop any liquid leaking out. It doesn't spill even if it is knocked over

### Results

- In 2000 Mandy was awarded the British Female Innovator of the Year award. She now runs three new businesses of her own



### Problem

- In Africa people rely on the radio as their means of communication but have limited access to batteries or electricity

### Solution

- Trevor Baylis invented the wind-up radio which works using a clockwork mechanism, eliminating the need for batteries or an electricity supply

### Results

- The radio was awarded the BBC Design Award for Best Product and Best Design, and Trevor was awarded an OBE by the Princess Royal

