

# LESSON 3: INVENTORS AND INNOVATORS IN NORTHERN IRELAND

Activity 1:	Big Thinkers (40 minutes)
Activity 2:	Meet the Makers (50 minutes)
Activity 3:	Future Innovators (40 minutes)

## INTRODUCTION

This lesson encourages the children to think about the contribution people born in Northern Ireland (or who have moved to Northern Ireland) have made to global Science and Innovation. Through the CCEA NI 100 timeline pupils can explore the work of a particular individual and bring them to life through a radio-style interview task. In the final task pupils create their own inventions to solve a contemporary technical problem.

This lesson supports or can be supported by these CCEA Key Stage 2 resources:

- [What makes us unique](#)
- [Science through stories](#)
- [Norn Iron's Ordinary Heroes](#) A Key Stage 3 resource in the form of comic strips. This may be accessible to some Key Stage 2 pupils as a source of potential questions for **Activity 2:** Meet the Makers radio interview task.

*You can use this as a stand-alone resource. Alternatively, it could be an extended piece of work or you could adapt individual activities to link with other themes or topics and different ability levels.*

LEARNING INTENTIONS	RESOURCES	KEY WORDS
Children will learn: <ul style="list-style-type: none"> <li>• about the rich history of science and innovation in Northern Ireland;</li> <li>• to use ICT to research facts about Northern Ireland inventors;</li> <li>• how to plan and create an imaginary discussion with an innovator to explore how they came up with their designs;</li> <li>• to use audio recording equipment to record their radio broadcasts; and</li> <li>• how to generate inventive solutions to technical problems people encounter in their lives.</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Resource 1:</b> Inventors and Innovators in Northern Ireland presentation</li> <li>• <b>Resource 2:</b> Big Thinkers</li> <li>• <b>Resource 3:</b> Meet the Makers – Radio interview writing frame</li> <li>• <b>Resource 4:</b> Future Innovators</li> </ul> Other useful resources <ul style="list-style-type: none"> <li>• CCEA NI 100 Timeline</li> <li>• BBC Teach <a href="#">KS2 How to Interview People</a> has interview tips and techniques</li> <li>• Audio recording or podcast equipment</li> </ul>	Inventor, innovator, cocoa, physicist, engineer, CERN, Large Hadron Collider, Celsius, electric telegraph, compass, sculptress, papier mâché, plaster of paris, manufacture, defibrillator, navigational

## CURRICULUM LINKS

### LANGUAGE AND LITERACY

#### Reading

- read, explore, understand and make use of a wide range of traditional and digital texts
- justify their responses logically, by inference, deduction and/or reference to evidence within the text, for example compare and contrast two characters in a story or history text
- read aloud to the class or teacher from prepared texts, including those they have composed, using inflection to assist meaning.

#### Writing

- write for a variety of purposes and audiences, selecting, planning and using appropriate style and form.

#### Talking and Listening

- participate in group and class discussions for a variety of curricular purposes, for example ask for and give reasons when trying to reach a conclusion in a group activity
- know, understand and use the conventions of group discussion, for example take turns as speakers, listen to other people's views and encourage others to participate in group discussions
- describe and talk about real experiences and imaginary situations and about people, places, events and artefacts
- prepare and give a short oral presentation to a familiar group, showing an awareness of audience and including the use of multimedia presentations
- use appropriate quality of speech and voice, speaking audibly and varying register, according to the purpose and audience
- prepare and give a short oral presentation to a familiar group, showing an awareness of audience and including the use of multimedia presentations.

#### Art and Design

- visualise, describe and sketch objects, environments, places and entities
- take individual thoughts and ideas as the inspiration for visual work
- collect, examine and select resource material to use in the development of ideas.

#### Drama

- explore voice, movement, gesture and facial expression through basic exploration of a specific role.

### THE WORLD AROUND US

#### Explore:

##### *Interdependence*

- how they and others interact in the world
- interdependence of people and the environment and how this has been accelerated over time by advances in transport and communications
- the effect of people on the natural and built environment over time.

##### *Place*

- change over time in places; and
- positive and negative effects of natural and human events upon a place over time.

*Change over time*

- how change is a feature of the human and natural world and may have consequences for our lives and the world around us.

**PD&MU STRAND 2 MUTUAL UNDERSTANDING IN THE LOCAL AND WIDER COMMUNITY**

- explore playing an active and meaningful part in the life of the community and being concerned about the wider environment.

**CROSS-CURRICULAR SKILLS****Using ICT**

- access and manage data and information.
- research, select, process and interpret information.

**Communication**

- listen to and take part in discussions, explanations and presentations
- communicate information, ideas, opinions, feelings and imaginings, using an expanding vocabulary
- find, select and use information from a range of sources
- use evidence from texts to explain opinions
- talk about, plan and edit work
- communicate information, meaning, feelings, imaginings and ideas in a clear and organised way
- develop, express and present ideas in a variety of forms and formats, using traditional and digital resources, for different audiences and purposes.

**THINKING SKILLS AND PERSONAL CAPABILITIES****Thinking, problem-solving and decision-making**

- generate possible solutions, trying out alternative approaches, evaluating outcomes
- examining options, weighing up pros and cons.

**Self-Management**

- organise and plan how to go about a task
- review learning and some aspect that might be improved
- learn ways to manage own time
- seek advice when necessary.

**Managing Information**

- ask focused questions
- plan and set goals, breaking a task into sub-tasks
- communicate with a sense of audience and purpose.

**Being creative**

- seek out questions to explore and problems to solve
- experiment with ideas and questions
- make new connections between ideas or information
- learn from and value other people's ideas
- make ideas real by experimenting with different designs, actions and outcomes
- take risks for learning.

## ACTIVITY 1: BIG THINKERS

### USE RESOURCE 1: INVENTORS AND INNOVATORS IN NORTHERN IRELAND PRESENTATION AND RESOURCE 2: BIG THINKERS

- Use slides 2 and 3 to show images of various inventions. Discuss with the pupils **what they think the six items are** and what they might have in common. The items included in the presentation are:
  - hot chocolate;
  - the large Hadron collider;
  - a fridge;
  - plaster of paris,
  - penalty kicks; and
  - a portable defibrillator.
- Once the class has come up with the answer (all the items were invented by Northern Ireland people or their inventions contributed to Northern Ireland), some of the children may be able to identify some of the inventors. Encourage them to share their knowledge with the class.
- Use slides 4–9: each slide matches the invention with the inventor. Discuss each slide in turn.
  - Slide 4: Sir Hans Sloane – Hot Chocolate  
More information is available at [Hans Sloane » History Sloane's Hot Chocolate | Award-Winning Posh Hot Chocolate](#)
  - Slide 5: Dr Stephen Meyers – the Large Hadron Collider at CERN  
More information is available at [ceng-stephen-myers.pdf \(engc.org.uk\)](#)
  - Slide 6: Lord Kelvin – Absolute zero which lead to refrigeration  
More information is available at [Temperature: Fahrenheit, Celsius, Kelvin | Live Science](#)
  - Slide 7: Anne Crawford Acheson – Plaster of Paris  
More information is available on the CCEA NI100 Timeline
  - Slide 8: William Mc Crum – Soccer Penalty Kick  
More information is available in this article [The goalkeeper from Northern Ireland who invented football's penalty kick | UK News | Sky News](#)
  - Slide 9: Professor Frank Pantridge – Portable defibrillator  
More information is available on the CCEA NI100 Timeline
- Ask the children to complete Resource 2 Part A to extend their knowledge.  
*This is an extensive piece of work. To make it more manageable, divide the class into groups of three or six. Ask each group member to complete only one or two inventors, so that each group will have a complete set of information to refer to for Activity 2.*
- Show slide 10. Ask the children to complete **Resource 2, Part B**. Children also decide which invention they think is most useful and why. Share and discuss as a class.
- *Some schools may have an automatic portable defibrillator that you could take the pupils to see. Encourage them to identify where they can find defibrillators in their local community.*

## ACTIVITY 2: MEET THE MAKERS

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USE **RESOURCE 1: INVENTORS AND INNOVATORS IN NORTHERN IRELAND PRESENTATION**, **RESOURCE 3: MEET THE MAKERS – RADIO INTERVIEW WRITING FRAME**, THE **CCEA NI 100 TIMELINE** AND THE COMPLETED COPIES OF **RESOURCE 2: BIG THINKERS** FOR REFERENCE.

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This video clip about [How to interview people](#) is also useful. You will need audio recording or podcast equipment.

- In pairs, ask your pupils to choose an inventor (or assign one for them). The inventors can be drawn from the six showcased in slides 4–9, other inventors from the CCEA NI100 timeline or appropriate suggestions from the pupils themselves.
- Ask each pair to research their inventor and complete **Resource 3**. Each pair plans 5 questions to ask their inventor which will be recorded for a fictitious radio programme Meet the Makers. Encourage the children to consider their audience and the purpose of the broadcast. Remind them to base their questions on facts but allow an element of creative license. The BBC resource [How to Interview People](#) has hints and tips for children about concluding an interview.
- As a class the children share and discuss their scripts. Each pair shares:
  - Who they are going to interview.
  - What questions they are going to ask.
  - How they will end the interview.
- When approved and ready, ask the children to record their interview for a fictitious radio programme called Meet the Makers. One child acts as the inventor, the other the interviewer. Share their recordings as part of an NI 100 assembly and/or make them available on the school website for parents and the wider community.

### ACTIVITY 3: FUTURE INNOVATORS

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USE **RESOURCE 1: INVENTORS AND INNOVATORS IN NORTHERN IRELAND** PRESENTATION, **RESOURCE 4: FUTURE INNOVATORS**, A WHITEBOARD AND JUNK ART MATERIALS.

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- Show slide 11. Explain to the class that they are going to have the opportunity to become inventors. Discuss what they think are technological problems that need to be solved. Record the children's ideas on the whiteboard.

If the children need prompting, encourage them to think about:

- transport problems
  - disabled access
  - parents with young children
  - older people
- In pairs or small groups, ask the children to narrow down the ideas from the class discussion to **one problem to solve** and note this on **Resource 4**.
  - Encourage the pairs or small groups to come up with three possible solutions, note them on **Resource 4** and then pitch the three options to another group to help them decide on the best option.
  - Next, ask the groups to create a prototype of their final option. The children can draw this on **Resource 4** or use junk material to build their designs.
  - Ask each group to display and present their final prototype to the whole class or to smaller groups.
- To extend this activity, you could ask the children to build and pitch their ideas in a Dragon's Den-style event. You could invite children from the class, adults from the school or a local scientist or engineer to judge their ideas.*
- Finally, show slide 12. The image of Sherlock shows another Northern Ireland invention. The Ulster overcoat, a Victorian gentleman's overcoat, was also invented here. The cape added warmth but allowed the arms to move freely. These days we usually only see Sherlock Holmes wearing one when he is solving mysteries.

**RESOURCE 1:**  
**INVENTORS AND INNOVATORS IN NORTHERN IRELAND PRESENTATION**

link to PP when ready

**RESOURCE 2: BIG THINKERS****PART A**

Use the words in the Word Bank to complete the information about the Northern Ireland Inventors and Innovators.

**WORD BANK**

chocolate, papier mâché, Belfast, electric telegraph, thousands, linen, portable, London, medicine, football, Kelvin, heart, CERN, sculptress, primary, Jamaica, particle, artist, zero, penalty kick, sugar, scientist

**Sir Hans Sloane**

Hans Sloane was born in Killyleagh. In 1687 while he was working in \_\_\_\_\_ he tasted a drink made of cocoa. He didn't like it at first but when he mixed it with milk and \_\_\_\_\_ it was delicious. He soon began selling it as Sir Hans Sloane's Milk Drinking \_\_\_\_\_.

**Dr Stephen Myers – Physicist and Mathematician**

Dr Myers is from \_\_\_\_\_. He was the scientist in charge of the Large Hadron Collider at CERN. This is the machine that discovered the Higgs Boson \_\_\_\_\_. Dr Myers often shares his expertise with young scientists. The photograph shows him meeting some pupils and teachers from St Malachy's College and Belfast Royal Academy when they visited \_\_\_\_\_ on a Shared Education trip.

**Lord Kelvin**

Lord Kelvin was a very busy \_\_\_\_\_ and inventor during the nineteenth century. Through his work he found the value of absolute \_\_\_\_\_ (-273.5 Celsius). With this knowledge, modern refrigeration could be developed. His work also contributed to the \_\_\_\_\_, which allowed rapid communication with the USA. The navigational compass which can still be found on most ships was also developed by Lord \_\_\_\_\_.

**Miss Anne Crawford Acheson**

Anne was born in Portadown in 1882. She was a talented \_\_\_\_\_ and moved to \_\_\_\_\_ to study. During World War I she wanted to help wounded soldiers who were returning home from the front. She used her skills as a \_\_\_\_\_ to design a support for broken limbs. Originally these were made of \_\_\_\_\_ but later she used plaster of Paris, which is still used today.



**Mr William McCrum**

William was born in 1865 in Milford Co. Armagh. His family were \_\_\_\_\_ manufacturers but William preferred \_\_\_\_\_. Even though he wasn't very good he was very fair and did not like players committing fouls. He devised the \_\_\_\_\_ to discourage unfair play. It was added to the rule book on 2 June 1891.

**Professor Frank Pantridge**

Professor Pantridge was born near Hillsborough in 1916. He found \_\_\_\_\_ school difficult and was excluded several times. He began to work hard and went on to study \_\_\_\_\_ at Queen's University Belfast. While he was working in Belfast, he discovered that some \_\_\_\_\_ problems could be fixed with an electric shock. Originally this had to be done in a hospital, but Professor Pantridge designed a \_\_\_\_\_ machine that could be taken straight to the person who was ill. His portable defibrillator has saved \_\_\_\_\_ of lives all over the world.

**PART B**

Which of these inventions is your favourite?

Why?

Which of these inventions do you think is the most useful?

Why?

**RESOURCE 3: MEET THE MAKERS –  
RADIO INTERVIEW WRITING FRAME**



Inventor or innovator being interviewed

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Introduction and background

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Question 1:

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Answer 1:

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Question 2:

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Answer 2:

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Question 3:

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Answer 3:

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**RESOURCE 3: MEET THE MAKERS –  
RADIO INTERVIEW WRITING FRAME**



Question 4:

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Answer 4:

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Question 5:

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Answer 5:

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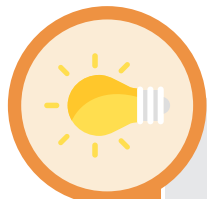
Sign off and goodbyes:

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**RESOURCE 4: FUTURE INNOVATORS**



PROBLEM TO BE SOLVED	IDEAS	FINAL DESIGN
	1.	
	2.	
	3.	