Suggested Lesson Duration	1 hour
	Lesson Introduction: This lesson uses a series of activities and discussions to introduce the idea of stereotypes surrounding STEM careers. This includes discussion about what makes a scientist and the diversity in the sciences themselves.
Objectives	• To discuss what a scientist is • To discuss the diversity in the sciences and the jobs that exist • To discuss who can be a scientist and why • To begin approaching what a stereotype is • To allow pupils to question their own ideas
Resources per group	
	"Robyn and the Robin" Short story (downloaded from <insert address>)[SM1]
	Draw a Scientist:
	Paper
	Colouring pens/pencils
	Picture sorting activity:
	1x set of science pictures per group (downloaded from <insert address>)[SM2]
	1x set of headings per group (downloaded from <insert address>)[SM3]
	Agree/Disagree activity:
	1 x set of headings (agree/disagree or Yes /No/Not sure)
	1 x pack of discussion questions. These could also be taken from discussions as part of previous activity
	Language Key
	Purple font denotes instructions and suggested questions Green font denotes explanations you can give to the pupils Black font denotes general information for your own knowledge

Lesson Section/ Duration	**Description**
Introduction 10 minutes	*To begin the lesson, read through the story with the class. This provides a basis to explore the themes in the lesson.* *Begin a discussion with the class about the story, the themes in the story and use this to discuss what they think a scientist does. Examples of questions you could pose are:* *Q. Poor robin, he was so tired! Why couldn't he sleep?* *A. -* Because of the street lights he was sleeping next to. *Q. How was Robyn able to help him get to sleep?* - By explaining the lights kept him awake and explaining to go and sleep somewhere where there were no lights. • In "Robyn and the Robin", there was a very tired robin, who needed some help sleeping. A scientist called Robyn helped the robin by explaining that he was being kept awake by the streetlights. She also introduced the robin to different types of scientists. Today we are going to look at what a scientist is, what types of jobs scientists do and who can be a scientist. *Q. What does a scientist do?* *Gather answers and refer back to the story. Answers may include:* • *Works in a laboratory, makes things, does experiments, invents things* • *Looks at the stars, thinks about where the world came from, works in the zoo* Scientists are people who ask questions, do experiments and try to find out the answers to their questions. There are lots of different kinds of scientist and each of them ask questions about how things work.
15 minutes	**Picture sorting activity**

	Working in pairs, look at each of these pictures and decide if you think the person is a scientist or not. If you think they are a scientist, then you should put the picture in the "Yes" pile. If you think they are not a scientist, you should put the picture in the "No" pile. *Using the materials downloaded and printed, pupils work in pairs to sort pictures into piles (or under headings) of pictures which show scientists and those which do not. At this point the class will be unaware that all of the pictures show scientists.* *Encourage the class to compare their choices with other groups and debate discuss the differences or similarities. Explain and explore that all of the pictures show scientists.* Let's find out what you decided about each of the pictures: 1. Coding *Q. What is happening in this picture?* *Q. Does this picture show a scientist?* This picture shows two people writing code. This is a way that we can tell computers what to do and can help us to solve problems and find the answers to questions we have. 2. Marine Biologist *Q. What is happening in this picture?* *Q. Does this picture show a scientist?* This picture shows a marine biologist. Marine biologists are people who study plants and animals who live in our seas and oceans. 3. Doctor and patient *Q. What is happening in this picture?* *Q. Does this picture show a scientist?* This picture shows a doctor and a patient. The doctor is helping the patient to feel better. Doctors learn about diseases and how to cure them.

	4. Ecology Field Trip *Q. What is happening in this picture?* *Q. Does this picture show a scientist?* These people are ecologists, who are scientists that study living things and how they survive in the place that they live, called their environment. It looks like they have been in the river behind them, looking for minibeasts in the water. 5. Child building a circuit *Q. What is happening in this picture?* *Q. Does this picture show a scientist?* This picture shows someone putting together a circuit, which is how we allow electricity to move and help to power different things. To do this they need to know about electricity, engineering and an exciting type of science called physics. 6. Kids in labcoats *Q. What is happening in this picture?* *Q. Does this picture show a scientist?* Are these people scientists? It looks like they are doing some tests with bacteria or something similar. Can children be scientists? Of course you can! Being a scientist is all about asking questions, doing experiments and finding out the answer. 7. Man and woman in labcoats *Q. What is happening in this picture?* *Q. Does this picture show a scientist?* This man and woman are working in a lab, They are wearing lab coats, safety glasses and gloves. *Q. Why do some scientists wear labcoats, gloves and safety glasses?* A. To keep themselves safe. *Q. Do scientists need to wear labcoats, gloves and safety glasses to be scientists?* A. No

Not all scientists wear lab coats. Some will, but not all of them need to wear lab coats. Remember how our sleepy robin thought that you needed to wear a lab coat to be a scientist. This is what we call a stereotype. A stereotype is a way of thinking about person or a group of people, that isn't always true.

8. Mechanic

Q. What is happening in this picture?

Q. Does this picture show a scientist?

This is a mechanic. They need to know lots about mechanics, which is a type of science about energy and forces. By knowing how this works, they can fix machines like cars that we need in our everyday life.

9. Night sky

Q. What is happening in this picture?

Q. Does this picture show a scientist?

Two people in this picture are looking up at the stars and planets in our night sky. The type of scientist who learns about outer space, stars, planets and even things like black holes is called an astronomer. Some astronomers use small telescope like the one in this picture, whereas others will use really big telescopes and cameras. Robyn mentions these types of scientists in the story.

10. River sampling

Q. What is happening in this picture?

Q. Does this picture show a scientist?

This person is called an environmental scientist. They are collecting water from this river to test to see how safe the water is. We need water to drink, keep ourselves clean and to wash things. Water can be filled with germs, diseases and pollution so we need scientists to help find how best to keep water clean and safe.

11. Vet

Q. What is happening in this picture?

Q. Does this picture show a scientist?

15 minutes	This is a veterinary surgeon, or a vet for short. A vet is a doctor for animals, and like human doctors they learn how to make all sorts of animals feel better. **Agree/Disagree activity:** I am going to read some sentences and I want you to tell me whether you think it is fair or not. If you think this is fair, you should give me a thumbs up. If you think what I've said isn't true, then you should cross your arms. If you are not sure, put your hands on your head. 1. "Steven is trying to move a heavy box, and Amy tries to help him. Steven says that he doesn't need her help, because boys are stronger than girls." *Q. Is this true? Why?* *Q. Are boys always stronger than girls?* *Q, Can girls be stronger than boys?* It is true that some boys are stronger than girls, but not all of them are. Some girls are stronger than boys as well. There are different ways to be strong and Steven might have found moving the box easier if he had worked together with Stephanie. 2. "Adam wants to be a nurse when he grows up, but his friends laugh at him and say that only girls can be nurses" *Q. Is this true? Why?* *Q. Has anyone ever seen a boy who is a nurse?* 3. All scientists wear lab coats *Q. Is this true?* *Q. What about the marine biologist we talked about earlier?* *Q. Why do scientists wear lab coats?* Lab coats are worn to keep scientists safe in a lab. They can also wear gloves and goggles too. But these wouldn't help if they were swimming underwater! Or if they were just using a computer for their work. Robyn in our story wasn't wearing a lab coat either.

	4. "Emily wants to play football during lunch break but she is told by some of the others that can't because football is only for boys." *Q. Is this true? Why?* *Q. Are girls not allowed to play football?* It doesn't matter whether you are a boy or a girl, you can play whichever sport you want. 5. Scientists don't work outside *Q. Is this true?* *Q. Do any scientists work outside?* There a lot of different scientists that work outside. Marine biologists sometimes work in the sea and some scientists called zoologists work in forests, jungle, zoos and many other places. We have also talked about ecologists and environmental scientists who spend a lot of time working outside. 6. Only boys can be in charge *Q. Is this true? Why?* *Q. Are girls never in charge?* *Q. What places have you ever seen a girl being in charge?* There are lots of times where we need people to be in charge. You could compare to class teachers, headteacher, mums and dads etc. Additional questions you could consider. 7. Only girls can cook 8. Anyone can be a scientist if they want to. Teachers can challenge perceptions and encourage discussion/debate between groups. Rounding up of overall ideas about stereotypes to see if any perceptions have been changed.

15 minutes	**Draw a Scientist** I would like you all to close your eyes and imagine a scientist. Think about what the scientist is wearing, what job they're doing and the place they might be. Don't tell anyone else what you are imagining Now I would like you to draw the scientist that you are imagining. *Q. "Who would like to tell everyone about their scientist?"* Reinforce positive outcomes and discuss any reasons why pupils drew what they did. Observe for any potential stereotypes being drawn including: • The "Einstein" type scientist • Glasses, Safety or otherwise • Mixing chemicals "potions" • All scientists being drawn wearing lab coats • Only white scientists being drawn • Only male scientists being drawn Examples could include: "I see your scientist isn't wearing a lab coat, because not all scientists wear lab coats do they? Some scientists wear regular clothes just like you and me." "Your scientist is an old man with messy hair. Is that what all scientists look like?" "Your scientist is blowing things up. Do all scientists blow things up?"
5 minutes	**Lesson Round Up** *Why couldn't the robin sleep in the story?* *Do all scientists look the same or do the same job?* *What types of scientists did you learn about today?*

Diversification/ Extension	Drawing activity: → The activity could be led as a group task with the whole class. The teacher draws on the board or larger piece of paper with ideas from the whole class. → The activity could be changed to a paper doll like activity where children put together their picture of a scientist from pre drawn items.
Further lessons	Cross curricular learning: Health and wellbeing / PSE - you may wish to introduce specific scientists and their stories to the class to discuss different issues surrounding other stereotypes and perceptions (Gender, race, LGBTQ+). Science – Introducing other types of science: you could use the pictures that were sorted to introduce a new topic or branch of lessons about that field. Animals, Oceans, Space etc. You could introduce a scientist of the week/month for the children to learn about. Who they are and what they did/do.
Background Knowledge	The 'draw a scientist' test, developed in the 1980s, provides a solid base for teachers to understand the stereotypes found in their class. It can be used as a spring board for further discussion or other activities. Link to original paper: *Chambers, D.W. (1983). "Stereotypic Images of the Scientist: The Draw a Scientist Test". Science Education.* ***67*** *(2): 255–265.* *Chambers (1983) Draw a scientist*
Common Misconceptions	**Pupils may think that:** • Scientists must wear lab coats • Scientists must work in labs • Working outdoors isn't science • Science is always about chemicals or "potions" • Only boys can be certain types of scientist (engineers)
Outcomes	• Pupils are aware that anyone can be a scientist • Pupils can identify different types of scientist • Pupils can use group work towards a common goal • Pupils can express their own opinions in discussion

Additional video and digital resources	Link to Online resources Skills Development Scotland - Gender Balance