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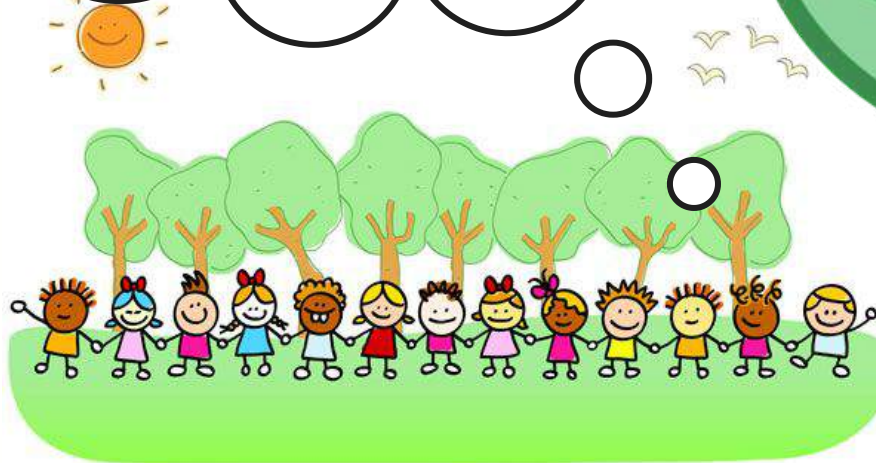
Science **Outside the Classroom**  
2018-2021

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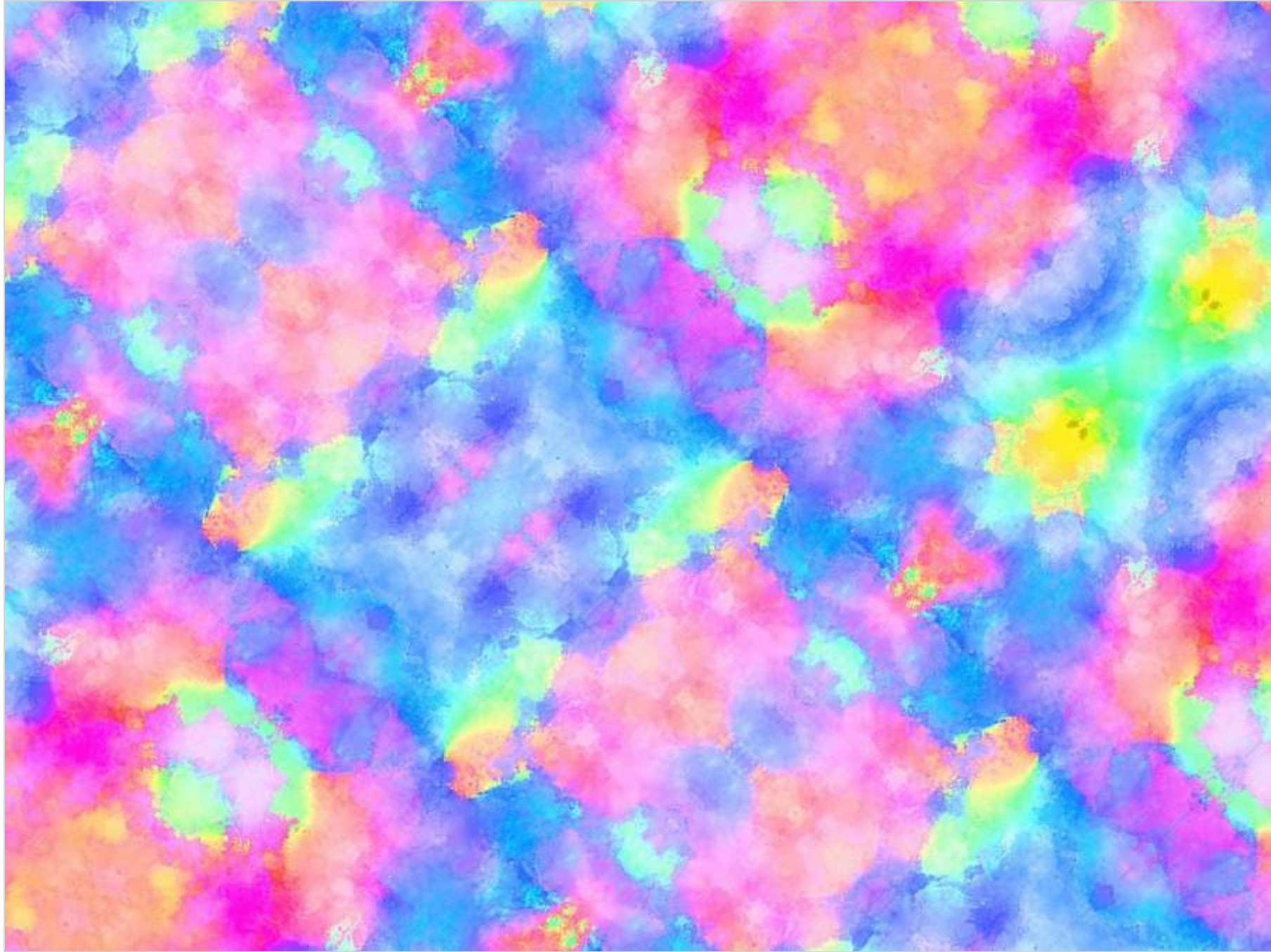


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University of  
Northampton



2018-1-UK01-KA201-047940







## University of Northampton



### The Research

Jane Murray PhD was Principal Investigator for the project evaluation - research strand - of the *Science Outside the Classroom* project. Jane is Co-Lead of the Centre for Education and Research at the University of Northampton. She joined the project team with extensive experience as a researcher in the field of education, and a specialism in participatory research approaches.

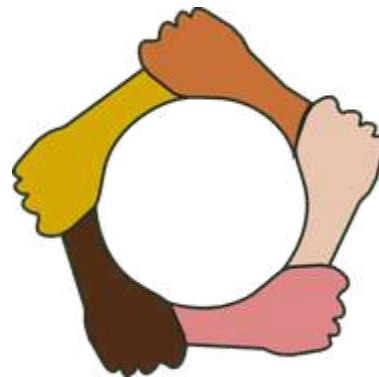
The aim of the project research strand was to investigate if and how an outdoor science programme may support the development of children's scientific enquiry skills and transversal skills in four European educational settings. Jane designed the project evaluation to engage teachers and children in establishing how the *Science Outside the Classroom* project supported three principle elements: (i) development of scientific enquiry skills outdoors, (ii) development of transversal skills through scientific enquiry outdoors, and (iii) establishing environmental features that facilitate scientific enquiry and transversal skills development. The research strand had four key objectives:

- \*To identify what scientific enquiry skills children aged 3-11 years may develop outdoors.
- \*To identify what transversal skills may children aged 3-11 years may develop through scientific enquiry outdoors.
- \*To identify features of the physical environment that may enable children aged 3-11 years to develop scientific enquiry skills and transversal skills outdoors
- \*To identify pedagogic strategies that may enable teachers to support children aged 3-11 years to develop scientific enquiry skills and transversal skills outdoors

The research was designed to collect information relating to the three principle elements, using multi-modal approaches.

## **Preface**

*The aim of this photo book is to show the collaboration of the Erasmus+ Science Outside the Classroom project. Through photos of the work of all the eager, innovative and curious children, teachers, principals and coordinators at participating schools in England, Croatia, Spain and Sweden, the book guides you through the process of creating pedagogical material for learning in an outdoor environment. The challenges were many as we were all affected by Covid-19 in different ways, which meant the project work had to be adapted accordingly. Thanks to the commitment of all project partners involved, the work continued and you hold the result in your hands.*



## **The book's chapters**

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10. **Seasonal changes** Page 60-65

## FORCES

Children explored the idea that different forces act on an object and investigated the effects of air resistance, water resistance, friction and gravity. They observed how things move on different surfaces and made comparisons between objects. Children explored the idea that unsupported objects fall towards Earth because of the force of gravity. Children also recognised that mechanisms can allow a smaller force to have a greater effect.



SPAIN - Exploring *forces* outside the classroom







Croatia - Exploring *forces* outside the classroom





Sweden - Exploring *forces* outside the classroom







England - Exploring *forces* outside the classroom







England - Exploring **forces** outside the classroom





## ANIMALS INCLUDING HUMANS

Children identified and named a variety of common animals and recognised that animals, including humans, have offspring which grow into an adult. They observed similarities and differences between animals and recognised that animals get nutrition from the food they eat. Children learned about the main parts of the human body and its internal organs. They explored the digestive system and the circulatory system and described their function. Children recognised how to keep their body healthy and explored the importance of exercise, eating the right amount of different foods and good hygiene.



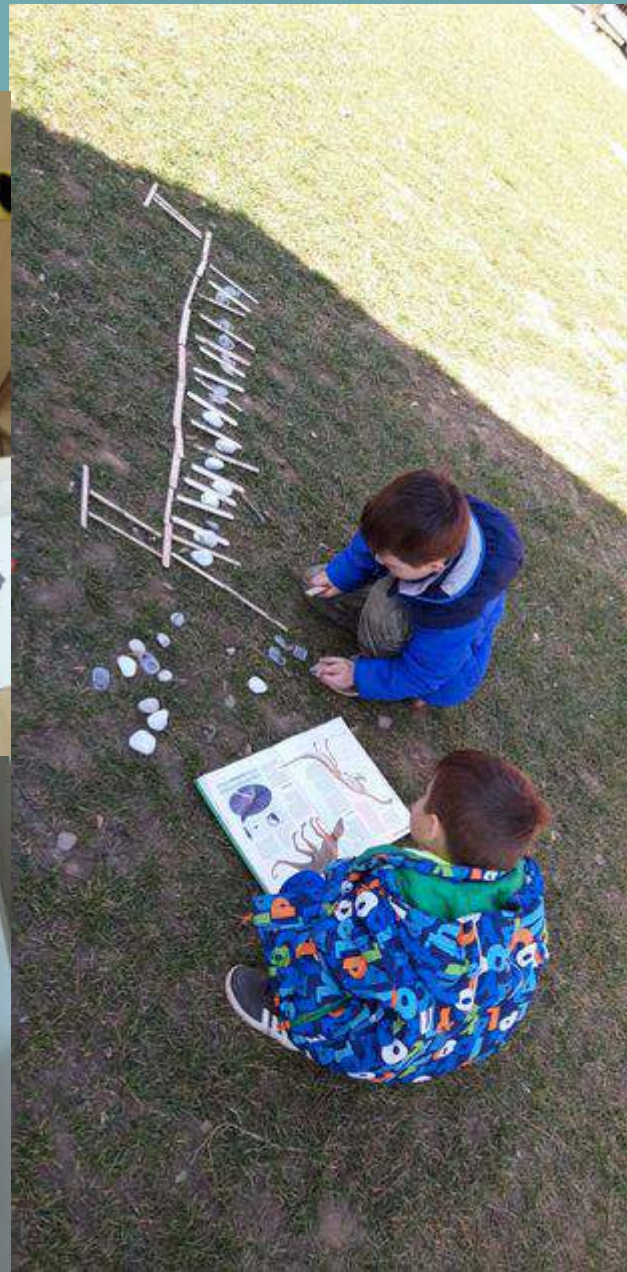
Spain - Exploring *animals including humans* outside the classroom





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**PETAR PAN**

Croatia - Exploring *animals including humans* outside the classroom



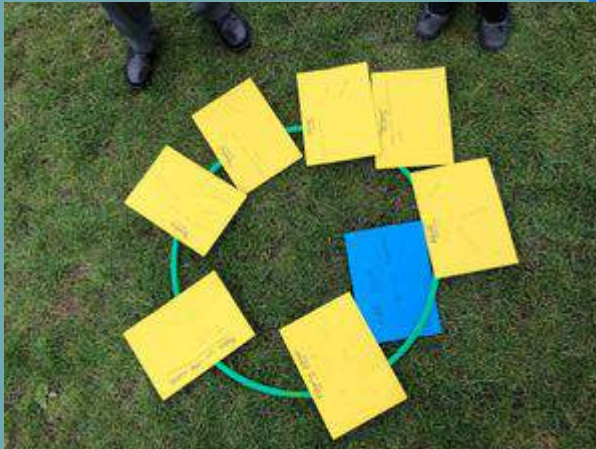








England - Exploring *animals including humans* outside the classroom







England - Exploring *animals including humans* outside the classroom





## MATERIALS

Children identified and named a variety of everyday materials and distinguished between an object and the material from which it is made. They explored the properties of materials and compared the suitability of everyday materials. Children also investigated reversible changes and used their knowledge of solids, liquids and gases to decide how mixtures could be separated.



Spain - Exploring *materials* outside the classroom







**Croatia** - Exploring *materials* outside the classroom





Sweden - Exploring *materials* outside the classroom







England - Exploring *materials* outside the classroom







**England** - Exploring *materials* outside the classroom





## PLANTS

Children identified and named a variety of common wild and garden plants in their local environment. They observed differences between flowering and non-flowering plants and identified the parts of a flowering plant. Children explored the part flowers play in the life cycle of a flowering plant and observed how seeds and bulbs grow into mature plants. Children also investigated what plants require to germinate, grow and stay healthy.



Spain - Exploring *plants* outside the classroom







Croatia - Exploring *plants* outside the classroom











**England** - Exploring *plants* outside the classroom







**England** - Exploring *plants* outside the classroom





## ROCKS

Children explored rocks and soils in their local environment. They compared and grouped rocks based on their appearance and simple physical properties and recognised that soils are made from rocks and organic matter.



Spain - Exploring **rocks** outside the classroom







Croatia - Exploring *rocks* the classroom





Sweden - Exploring *rocks* outside  
the classroom







England - Exploring **rocks** outside the classroom







England - Exploring **rocks** outside the classroom





## LIGHT

Children explored the way that light behaves and identified different sources of light. They recognised that light from the sun was dangerous and explored ways to protect their eyes from the sun's harmful rays. Children observed that shadows were formed when light was blocked and found patterns in the way shadows change. Children also investigated what happens to the light energy absorbed by an object.



Spain - Exploring *light* outside the classroom







Croatia - Exploring *light* outside the classroom





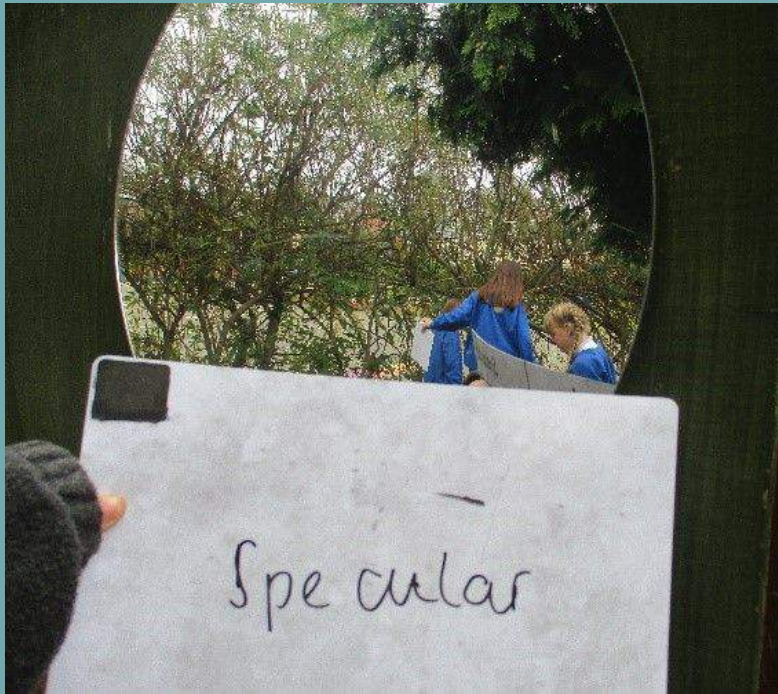
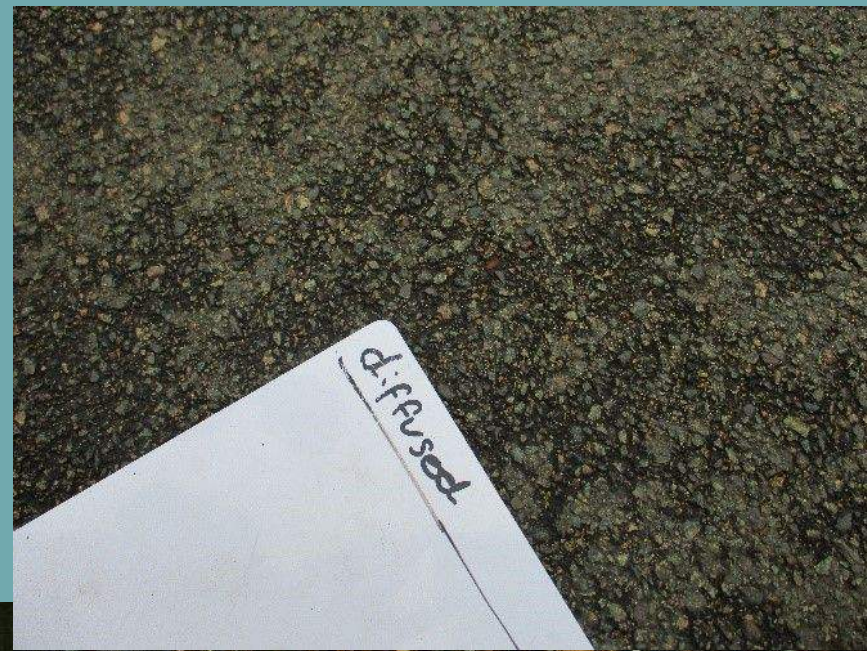
Sweden - Exploring *light* outside the classroom







England - Exploring *light* outside the classroom







**England** - Exploring *light* outside the classroom



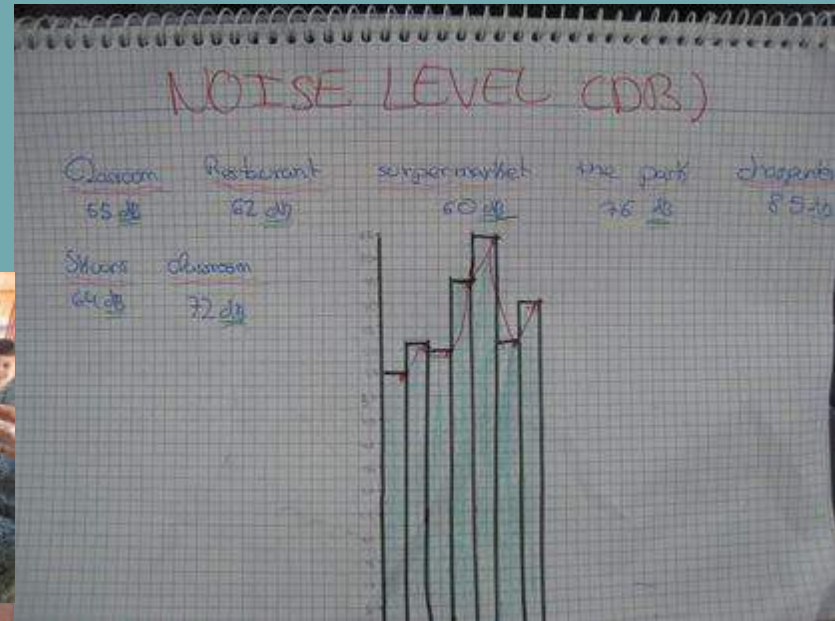


## SOUND

Children explored how sounds are made and associated a sound with something vibrating. They recognised that sound vibrations travel through a medium to the ear and explored how sounds get fainter as the distance from the sound source increases. Children also explored patterns between volume and the strength of vibrations.



Spain - Exploring *sound* outside the classroom







Croatia - Exploring **sound** outside the classroom





Sweden - Exploring **sound**  
outside the classroom







England - Exploring **sound**  
outside the classroom





**England** - Exploring *sound* outside the classroom





## EARTH AND SPACE

Children were introduced to a model of the solar system and explored the position of the Earth and the other planets relative to the Sun. They investigated the distance between the planets and made comparisons of size. Children explored how gravity affects their body movements and the relationship between a planet's mass and the force of gravity the planet exerts. Children also investigated which materials blocked out ultraviolet light and would therefore be a suitable material for an astronaut's spacesuit.



Spain - Exploring *earth and space* outside the classroom







Croatia - Exploring *earth and space* outside the classroom





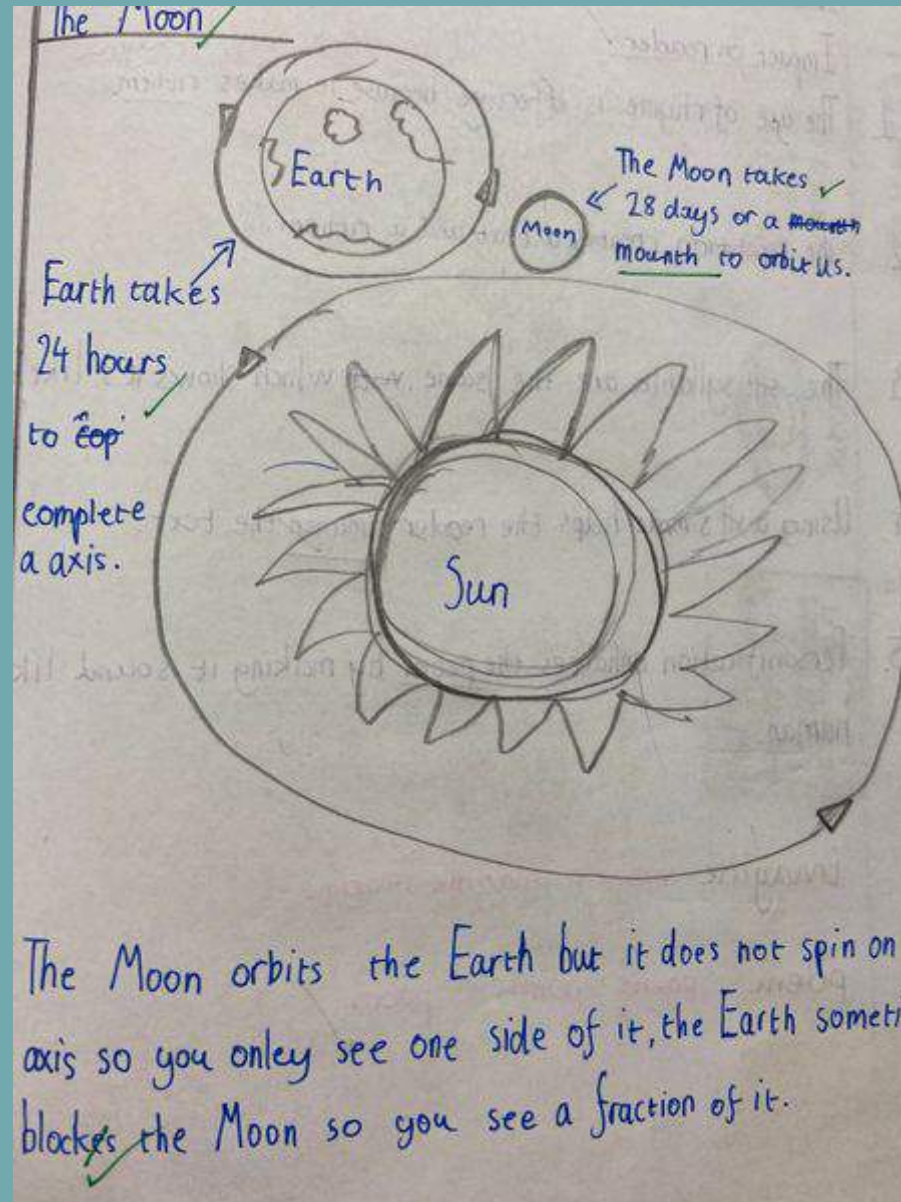
Sweden - Exploring *earth and space* outside the classroom





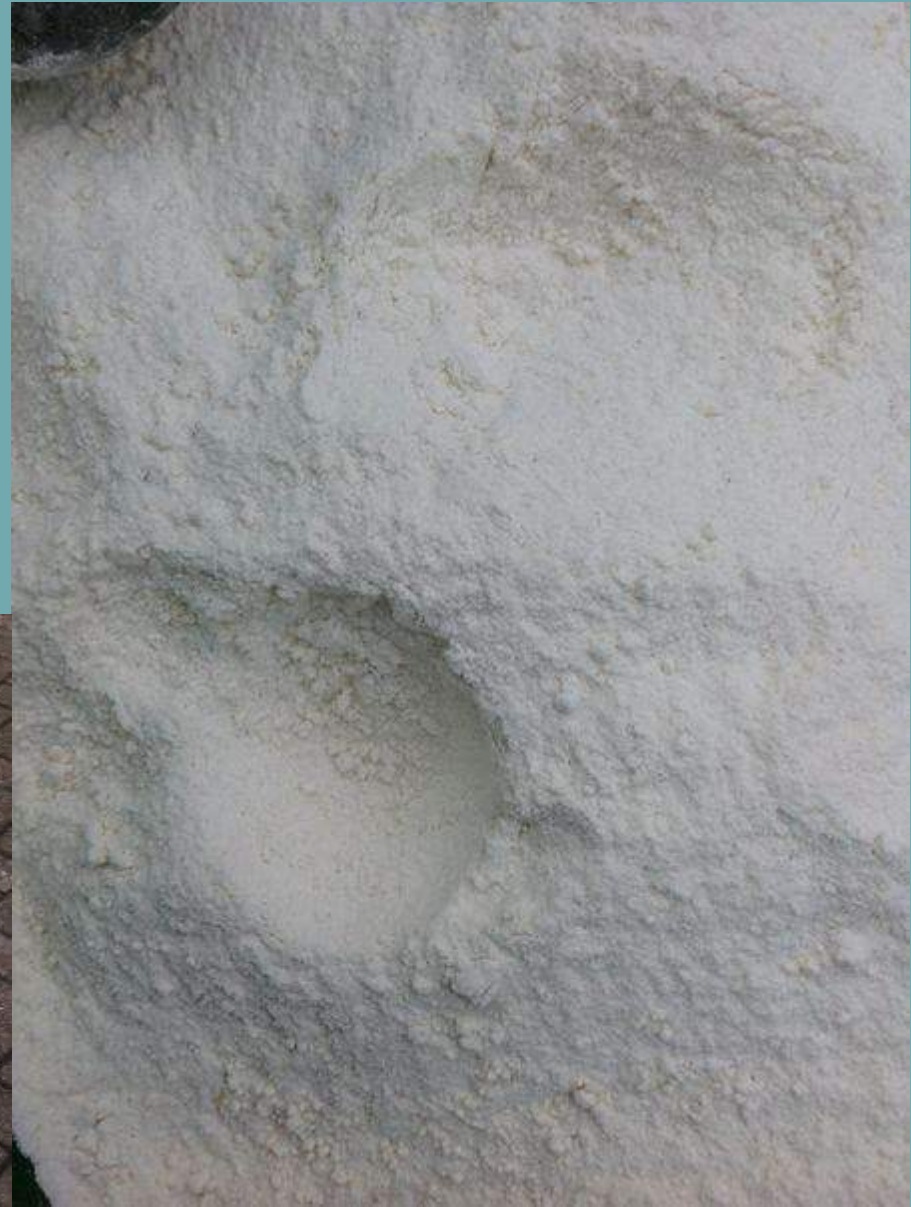


England - Exploring *earth and space* outside the classroom





**England** - Exploring *earth and space* outside the classroom





## HABITATS

Children explored the idea that most living things live in a habitat to which they are suited and that this habitat provides the basic needs of an animal or plant. They identified and named plants and animals in their local environment and learned that living things can be grouped in a variety of ways. Through direct observation, children grouped, identified and named living things in their local environment using classification keys.



Spain - Exploring *habitats* outside the classroom







Croatia - Exploring *habitats* outside the classroom





Sweden - Exploring *habitats*  
outside the classroom







England - Exploring *habitats* outside the classroom







England - Exploring *habitats* outside the classroom





## SEASONAL CHANGES

Children explored changes in the weather across the four seasons. They observed and described the weather in each season and explored differences between the seasons including the variation in day length.



Spain - Exploring *seasonal changes* outside the classroom





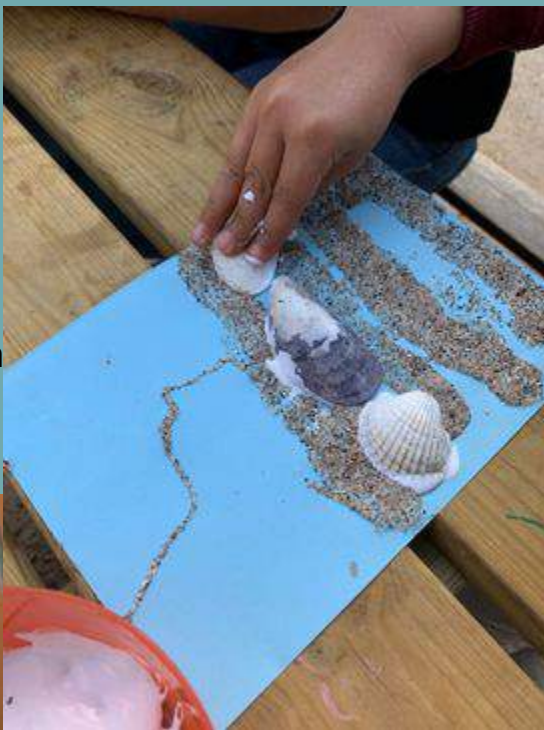


**Croatia** - Exploring *seasonal changes* outside the classroom





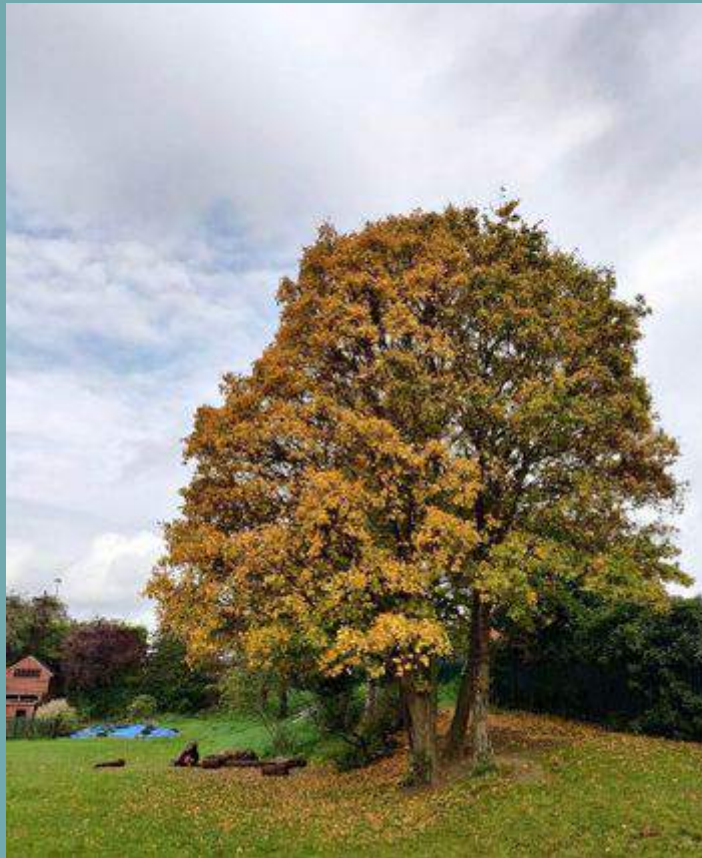
Sweden - Exploring *seasonal changes* outside the classroom







**England** - Exploring *seasonal changes* outside the classroom







**England** - Exploring *seasonal changes* outside the classroom





