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| **Create a Map of Local Flora and Fauna** | | | |
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| Gather information about local flora and fauna and create a map with coordinates showing the location of plants and animals | | | |
| **Subject(s):** Science, Mathematics  **Approx time:** 80 - 120 minutes |  | | **Key words / Topics:**   * Flora/Plants * Fauna/Animals * Position * Coordinates * Measurement * Meters * Scale |
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| **Suggested Learning Outcomes** |  | |  |
| * To be able to draw a map * To be able to plot the positions using coordinates * To be able to create, identify and describe flora and fauna. * To be able to use SI units for lengths/distances. * To be able to measure an area and scale it onto a map. | | | |
| **Introduction** |  | |  |
| This is one of a set of resources developed to support the teaching of the primary national curriculum. They are designed to support the delivery of key topics within maths and science. This resource combines understanding of the natural world with maths skills, to create a map and guidebook of the local flora and fauna.  Plants and animals are an important part of our natural environment. We can use our maths and science knowledge to better understand them and hence the environment around us! | | | |
| **Purpose of this activity**  In this activity learners will work together to gather information about local flora and fauna. They will create a map with coordinates showing the location of plants and animals, which they can then assemble as a class to form a guidebook to the local area. Within this, they will take actual measurements of the area during the practical activity and work to scale on grid paper. They will also use digital photographs or drawings of flora and fauna to create information pages that could go into a class guidebook.  This activity could be used as an extended main lesson activity, using a practical approach to teach learners to use number coordinate skills and improve their understanding of the natural world. It could also be used as one of several activities within a wider scheme of learning focussing on understanding of the natural environment. This activity, with omission of the practical content, could also be used as a starter or main activity to introduce geometry, position and direction. | | | |
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| **Activity** |  | | **Teacher notes** |
| **Introduction (10-15 minutes)**  Teacher to explain that learners are going to make a guidebook of plants and animals (flora and fauna) in a selected area. They will go outside with a map to plot each plant or animal in that area and write a short description about them. The presentation can be used to explain how this is to be done using a grid and coordinates.  **Preparation to go outside (5-10 minutes)**  Learners to put on coats and go outside, with clipboards, grid paper map and camera.  **Teach demonstration (10-15 minutes)**  Teacher to demonstrate how to make a map of a selected area, which features to note and how to make measurements:   * Learners should use grid paper make a map of the area they have been allocated. * Each square on the grip paper is equal to a measurement of 0.3 meters/one ruler length. * Start by drawing on any fixed features, such as buildings. * Identify and take a digital picture of any plants and animals (sketch if no camera available). * Record their location using x and y coordinates.   **Creating the maps (20-30 minutes)**  Learners to carry out the activity.  **Back in the Classroom - Guidebook (30-40 minutes)**  Learners complete a record sheet for each observed item (this can be divided between team members):   * Print out and stick on the photograph. * Write a short description: * What is it called? * What does it look like? * Do you need to do anything else to find it?   **Discussion (5-10 minutes)**  Discuss the results as a class – are there a lot of flora and fauna in the area? What does this tell us about the environment where the flora and fauna are located?  Collate the maps and record sheets to form the guidebook. |  | | This activity is best carried out in small groups. It is important to select an appropriate location. This could be the school grounds, local park or other available areas, such as local woods. Appropriate risk assessment and mitigation actions must be made, where necessary. Appropriate permissions must be obtained if needed.  The teacher should make an outline map of the area and identify appropriate grid areas that can be allocated to each group. It is recommended that this is done within the selected area, to ensure that any additional potential hazards are identified. If necessary, learners could be assisted by having fixed features pre-drawn on their provided grids.  The grid size could be adjusted for ease of calculation. However, the suggested size is based on the length of a ruler, so weaker pupils could count ruler lengths as grid squares.  The use of coordinates should be presented in the classroom before undertaking the activity, then reinforced in the location where the practical investigation is to be undertaken, prior to the learners starting.  Appropriate guidance should be given to learners on the possible handling (or not) of flora and fauna. The learners should wear appropriate clothing and footwear for the activity.  Learners may need initial help to confirm their start locations on the map. These could be marked in advance by, for example, chalk numbers written on the ground. These can then be used as a datum from which their coordinates are made (marking the [0,0] position).  It may assist if only one team member produces the map, and the others focus on measurement and/or describing the observed flora and fauna. The flora and fauna could include plants, trees, observed birds and wildlife and insects.  The final guidebook will be a compilation of all the pupils or teams work. |
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| **Differentiation** |  | |  |
| **Basic** |  | | **Extension** |
| Provide learners with pre-prepared grid paper maps of the target area, showing fixed features.  Allow learners to use ‘ruler lengths’ rather than measuring values. |  | | Add a scale to the map. Calculate the coordinates relative to maps produced by other groups or a ‘master’ datum/starting point.  Make a table of all the flora and fauna found in the area and identify the common features.  Produce a cover and index for the assembled book. |
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| **Resources** |  | | **Required files** icon-docicon-pdficon-ppt |
| * Access to an appropriate outside area with flora and fauna * Pencils * Rulers * Clipboards * Digital cameras * Grid sheets to map the local area * Tape measures * Chalk * Glue sticks or sticky tape |  | | Teacher presentation – Create a Map of Local Flora and Fauna  icon-doc Worksheet –  Create a Map of Local Flora and Fauna |
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| **Additional websites** |  | |  |
| BBC Bitesize - Do you know these endangered UK flowers?: <https://www.bbc.co.uk/bitesize/articles/zb99cqt>  * **BBC Bitesize –** What are coordinates?: <https://www.bbc.co.uk/bitesize/topics/zs7mn39/articles/zvfhhbk> | | | |
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| **Related activities (to build a full lesson)** |  | |  |
| **Starters** (Options)   * Discuss the importance of flora and fauna to the natural environment.  Watch the video BBC Bitesize - Do you know these endangered UK flowers?: <https://www.bbc.co.uk/bitesize/articles/zb99cqt>  * Discuss how maths techniques can be used to find your position and help with direction. Watch the video: BBC Bitesize – What are coordinates?: <https://www.bbc.co.uk/bitesize/topics/zs7mn39/articles/zvfhhbk> | | **Extension** (Options)   * Add a scale to the map for distance to and from different places on the map. Calculate the coordinates relative to maps produced by other groups or a ‘master’ datum/starting point. * Make a table of all the flora and fauna found in the area and identify the common features. * Produce a cover and index for the class’s assembled book.   **Plenary**   * Discuss the meaning of the results gathered – how many flowers and creatures were found? What does this tell us about the environment where they are located? | |

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| **The Engineering Context** film |
| * All over the world, environmental engineers will map flora and fauna to see how it is changing. For example, how are parts of the world being affected e.g. by trees being cleared in the Amazon, climate change in the Polar regions or flooding in Asia. |

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| **Curriculum links** | |
| **England: National Curriculum**  Maths  KS2 Year 5 geometry – position and direction   * identify, describe and represent the position of a shape following a reflection or translation, using the appropriate language, and know that the shape has not changed.   KS2 Year 4 maths – measurement   * Convert between different units of measure [for example, kilometre to metre, hour to minute] * measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres   Science  KS2 Year 4 living things and their habitats  explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment | **Northern Ireland Curriculum**  KS2 Mathematics and Numeracy  Shape and space   * understand the notion of angle in the context of turning, recognise right angles, understand clockwise and anti-clockwise, know the eight points of the compass.   Measures:   * identify understand and use the language associated with length, weight, capacity, area and time * know and use the most commonly used units to measure in purposeful contexts.   KS2 The World around us - interdependence   * how living things rely on each other within the natural world. |
| **Scotland: Curriculum for Excellence**  Numeracy and mathematics  Shape, position and movement - angle, symmetry and transformation   * MTH 4-18a   Measurement:   * MNU 3-11a   Science  Planet Earth  Biodiversity and interdependence   * SCN 4-01a | **Wales: National Curriculum**  Mathematics  Using measuring skills – Area and volume Angle and position   * Y5 use coordinates to specify location * select and use appropriate standard units to estimate and measure length, weight/mass and capacity * measure on a ruler.   Science  Interdependence of organisms   * *(compare)* through fieldwork, the plants and animals found in two contrasting local environments, e.g. identification, nutrition, life cycles, place in environment |
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| **Assessment opportunities** | | |
| * Informal teacher assessment of the activity through observing the task and Q&A. * Formal assessment of the assembled guidebook. | | |
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