Pioneer Federation
Medium term plan
LKS2- Cycle 1 Term 2
Science

Subject: Science

Key Concept/ Theme:

- To know and identify the seven life processes.
- To know how to use/create a classification and key to identify living things.
- To name and sort into the 5 main animal groups.
- To identify/classify living things in their local environment.
- To know the effect that human activity has on the environment.

Prior Learning links:

Year 2:

- Explore and compare the differences between things that are living, dead, and things that have never been alive
- Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other.
- Identify and name a variety of plants and animals in their habitats, including micro-habitats

Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food.

Vocabulary:

Habitat, micro habitat
Pond, meadow, log pile, woodland, river, lake, beach, cliff
Organism – plant, animal
Trees - deciduous, evergreen, ash, birch, beech, rowan, common lime, oak, sweet chestnut, horse chestnut, apple, willow, sycamore, fir, pine , holly, etc
Wild flowering plants - cleavers, coltsfoot, daisy, dandelion, garlic mustard, mallow, mugwort, plantain, red clover, self heal, shepherd's purse, sorrel, spear thistle, white campion, white deadnettle and yarrow.
Garden plants – crocus, daffodil, bluebells, etc
Parts of plants – roots, branch, trunk, stalk, leaf, flower, petal, seeds, bulbs and twigs
Invertebrates – snail, slug, woodlouse, spider, beetle, fly, etc
Pond animals – pond skater, water slater, ramshorn snail, pond snail, leech, common frog, smooth newt, etc

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1.	**Prior learning reconnection (year group, cycle & term):** Cycle 2, KS1, Term 4- Living things and their habitats **LO:** To be able to explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment. **Skill:** Group and classify If the children have completed the units of study in Key Stage 1, they should already be able to name many different animals and be able to place them in the correct group. As well as using this first session to reinforce this learning, it will also produce information as to the number of different species, which can then be compared to what they have found before, as long as your school has begun to maintain nature diaries about your finds throughout every year. **Survey – How many different animals can we find in the wildlife area?** The following video will show how to identify bees and other similar insects - http://www.bbc.co.uk/nature/collections/p00fxg0m#p007vh74 Hopefully your school has now established a good range of habitats within the school ground. Allow the children to explore these, recording the number of each animal that they find. Discuss as a class the animals that were found. Was this more or less than at other times in the year, or in the past? **Observation enquiry – How are the animals suited to where they live?** In Year 2 they should have learnt about animals being suited to their environments. Once again, this is an opportunity to reinforce that learning. Choose several of the animals that the children have found. Ask the children to decide as a group what that animal has that makes it suited to where it lives. They can then explain this to another group. Recording Under the title of 'The Great Survivors', the children can draw and label several of the animals that they have found, explaining how it is suited to the habitat in which it was found. Next to the name of each of the animals that they must record the group that it belongs to.
2.	**Reconnection:** Can you name some living things you may find in this environment? **LO:** To be able to explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment. **Skill:** Group and classify Once again, in Year 1 the children will already have learnt the names of many plants. This is an opportunity to reinforce that learning and extend the number of plants they can identify. **Identifying - Can you use the flower to identify the plant?** Prepare your identification chart of the flowers that children might find in your outdoor areas. www.shootgardening.co.uk/plant/identify will help you to identify some of the plants. You will need to make these charts close to the time that you want the children to go out and find them as some plants only flower for a short period of time. Obviously depending on your environment this will be easier for more difficult but if you do not have many winter plants in your environment then you could purchase some for the class to look at and identify from a garden centre. For example at this time of year you can get poinsettias or Amaryllis. Encourage children to look for: colours, number of petals, shape of petals and the parts inside the petal.

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	The Great Plant Hunt identikit will help children to identify: cleavers, coltsfoot, daisy, dandelion, garlic mustard, mallow, mugwort, plantain, red clover, self heal, shepherd's purse, sorrel, spear thistle, white campion, white deadnettle and yarrow • http://www.greatplanthunt.org/teachers (then click on the 'The Great Plant Hunt Identikit') Recording Photos of each of the plants when they first flower could be placed in a nature diary, along with the date. Alternatively, press some of the flowers using a flower press and stick these in the diary when they are dry. Classifying plants – Which groups can we place plants into? Classifying plants is more difficult than animals. Thus, keep it quite straight forward. Using the hoops again on the playground, label them in the following ways and again ask the children to place a picture of a plant that matches the category when you call it out: 1. Deciduous and evergreen trees 2. Flowering plants (including grasses) and non-flowering plants (ferns and mosses
3	Reconnection: How can we classify plants? LO: To be able to recognise that living things can be grouped in a variety of ways. Skill: group and classify Practicing a skill – Using a classification key Begin by looking at some published examples of classification keys. Provide the children with pictures of particular animals and ask them to use the keys to identify what they are. Begin with looking at land invertebrates (something the children should be quite familiar with now). Give each group a picture of an animal. Ask them to use the questions to identify the animal and try not to just match it up with a similar picture on the chart. To aid this, ask the children to place a thick piece of paper under where is written 'start here'. The children can only move the paper downwards as they start to answer the questions. Discuss with the children which organisms were the hardest to identify and why this was. Identifying trees with a classification key Hopefully the children will now be familiar with several of the trees in the wildlife area. They could, for example, use the 'Identifying trees and shrubs' key from Gatekeeper, to find a tree that are familiar with and then follow the descriptions backwards up the key until they reach 'start here'. That way they would have identified some of the criteria used by scientists when trying to work out which tree they are looking at.
4	Reconnection: What is a classification key? LO: To be able to recognise that living things can be grouped in a variety of ways. Enquiry skill: Presenting results Practicing a skill – Creating a classification key

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	1. Creating a classification key for land invertebrates Provide children with six pictures of different invertebrates, a 'start here' label, empty labels and pieces of string. Having placed down the 'start here' label, each group must decide a question that might separate the animals into two groups. They can write this question on to the label and place it under the 'start here' label. Pieces of string can then proceed downwards, each labelled. Having moved the pictures of the animals into the two groups, the children can think of further questions for separating these animals. The children continue to use their labels and pieces of string until each of the pictures is on its own. Children can try to use another group's classification key. You could extend this skill by providing the children with more land invertebrates to include on their key. Now that they have had a go at doing their own, you can discuss why scientists find it useful to have such tools when they are dealing with hundreds if not thousands of different animals. Recording Photos could be taken of the children's classification keys, and then stuck in their books.
5	Reconnection: how do we use a classification key? LO: To be able to recognise that environments can change and that this can sometimes pose dangers to living things. Enquiry skill: Explaining Conclusions Deep thinking time – How does a change in the environment affect the things that live there? Take children outside to look again at particular habitats and micro habitats. Explain to the children that these habitats exist as part of a larger environment. ***Take the children for walk beyond the school gates; looking for evidence as to how the environment can affect (positively and negatively) the animals that live there).*** Explain to them that you will give them a made-up piece of news and they have to think what might happen next. 1. The factory in the next town has started making something new. As a result, dark smoke is often seen coming out their large chimneys. 2. A new road has been built next to the wildlife area. This road is very busy. 3. An all-weather sports pitch has been built next to the wildlife area. The pitch has large floodlights. 4. A tall building has been built next to the wildlife area. You could provide the children with a set of picture of animals and plants that can be found in your wildlife area. After each 'new bulletin', ask them to discuss in their groups which of the organisms have been affected; some might have a better chance of survival, whereas for others there chances might have become worse. For example, a positive effect for some of the organisms could be: some birds (like gulls) might have built their nest on the tall buildings, the black soot from the chimney could have made trees darker which will enable darker moths to be better camouflaged, and busy roads might have driven away the foxes, making it less likely that small mammals will be eaten. Negative effects could include: the smoke from the factory killing some of the plants, the bright light might have confused some birds; making them more active than they should be, and the tall building's shadow might have removed the light that was required by many of the plants. Recording The children could draw the before and after of one or more of the news stories. Research - Planning an even better nature area

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	Challenge the children to design a plan for an even better wildlife area for the area they have visited. They should be able to find information online and in books that can help them with this. If possible, give the children a chance to put some of their plans into action, and monitor the impact of these changes on the organisms that live there. http://www.bbc.co.uk/learningzone/clips/how-to-make-a-bug-home/12981.html - This video demonstrates how to build micro-habitat for invertebrates. http://www.bbc.co.uk/learningzone/clips/woodland-pond-and-ditch-habitats-within-a-garden/2309.html - This video shows a garden designed for wildlife. Recording The children could draw the nature area, showing where improvements could be made. They could also include a code of conduct for uses of the wildlife area; e.g. no littering, allow the meadow to grow through spring and summer, clean the bird's water dish, etc.
6	Reconnection: What improvements could be make to our local nature area? LO: To be able to recognise that environments can change and that this can sometimes pose dangers to living things. Enquiry skill: Asking questions Research – What changes have affected environments throughout the world? This is a great opportunity for children to find out more about how environments are changing and have changed throughout the world. Remember that there are often positive benefits as well as the negative results. The following videos will initiate the discussions: Deer in a cemetery - http://www.bbc.co.uk/nature/collections/p00fxg0m#p007yf7r Bats in the loft of a modern house - http://www.bbc.co.uk/nature/collections/p00fxg0m#p008cmzl Change of plant life in Kent - http://www.bbc.co.uk/learningzone/clips/changing-ecosystems-the-deforestation-of-britain/3234.html Foxes at a landfill site - http://www.bbc.co.uk/learningzone/clips/how-a-landfill-habitat-provides-for-a-fox-family/13973.html Red tailed bumblebees at a wasteland - http://www.bbc.co.uk/learningzone/clips/how-wasteland-acts-as-a-supportive-habitat-for-red-tailed-bumblebees/13974.html Problems facing sea birds - http://www.bbc.co.uk/learningzone/clips/the-problems-facing-seabirds/6124.html Threat to water vole habitats - http://www.bbc.co.uk/learningzone/clips/water-vole-habitats/2311.html Threat to giant tortoises - http://www.bbc.co.uk/learningzone/clips/why-are-giant-tortoises-endangered-in-the-wild/6571.html Recording The children will need to explain each time: what the environment looks like now, how it has changed, and what impact it has on particular organisms that live there (or lived there).
7	Quiz/assessment

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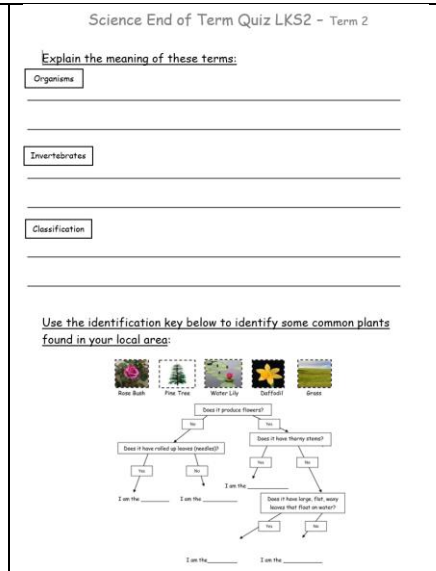
Science End of Term Quiz LKS2 – Term 2

Explain the meaning of these terms:

Organisms

Invertebrates

Classification

Use the identification key below to identify some common plants found in your local area:

Rose Bush | Pine Tree | Water Lily | Daffodil | Grass

Does it produce flowers?

Does it have rolled up leaves (needles)?

Does it have thorny stems?

Does it have large, flat, waxy leaves that float on water?

I am the _____

End points:

Recognise that living things can be grouped in a variety of ways
Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment
Recognise that environments can change and that this can sometimes pose dangers to living things.

Future learning links:

5	• Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird • Describe the life process of reproduction in some plants and animals.
6	• Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals • Give reasons for classifying plants and animals based on specific characteristics