
PLANT REPRODUCTION

Lesson Plans

Janet Huguet

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TOPIC: LIVING THINGS: HOW TO CLASSIFY THE TWO KINGDOMS	LESSONS 1 & 2	TIMING 2 sessions	LEVEL: 5 th
KEY SKILLS: Pupils will be able... <ul style="list-style-type: none"> To consider that scientific classification is important because it is a worldwide labeling systems, and provides a means for the systematic study of living things. 			
TRANSFERABLE SKILLS : Pupils will be able... <p>Communicative skills:</p> <ul style="list-style-type: none"> To ask and answer questions, and to select relevant information from the topic. <p>Methodological skills:</p> <ul style="list-style-type: none"> To develop strategies to understand the content: summarising, comparing and organising. <p>Personal skills:</p> <ul style="list-style-type: none"> To develop individual or collective projects with creativity, confidence, responsibility and critical thinking. 			
Aims <ul style="list-style-type: none"> To describe classification as the process by which things are grouped. To observe and recognise some simple characteristics of animals and plants. To explain that all livingthings can be classified into five major kingdoms To name some of the different typesof living things found in the plant kingdom. 			
TEACHING OBJECTIVES	LEARNING OUTCOMES Learners will be able to:	COMMUNICATION	
A.CONTENT * Present the two kingdoms by offering: - Stragegies to classify living things - Giving characteristics of living things.	A.CONTENT * Identify important information. * Share information found. * Justify why animals / plants are living things. * Use scientific processes and thinking skills * Memorise Key vocabulary.	Language OF learning: <u>Key vocabulary:</u> Living, non-living, animal & plant kingdom, invertebrates, vertebrates, fish, amphibians, reptiles, birds, mammals, non-seed & seed plants, algae, mosses, ferns. <u>Key phrases needed:</u> I think a is a ... because... Can it...? Is it ...? Does it have ...?	
B.COGNITION To allow opportunities for pupil to discuss and decide: - why animals and plants are living things. - how to carry out an investigation..	B.COGNITION *Apply memorised key vocabulary in different contexts *Analyse the importance of plants for life.	Language FOR learning: * Classroom language, Following instructions. * Language to carry out worksheets and discussion tasks * Doing an oral presentation Language THROUGH learning: * Questions that come across the lesson.	
CULTURE: Pupils will appreciate better: <ul style="list-style-type: none"> Appreciate better English as a language for learning. How to take care of animals and plants and why that is important. How and why plants are important to all live on Earth. 			



ASSESSMENT CRITERIA:

- Ensure that students can differentiate living things from non-living things.
- Observe that they know the basic features of inert and of living things.
- Sort animals and plants into groups using observable features.
- Able to explain likeness and differences between each group. e.g. they all have six legs, these have flowers, these do not
- Able to explain likeness and differences between each group using some scientific vocabulary e.g. this is an amphibian it can live on water and on land, these are flowering plants.

TOPIC: PARTS OF A FLOWER AND THEIR FUNCTIONS	LESSONS 3, 4 & 5	TIMING 3 sessions	LEVEL: 5th
<p>KEY SKILLS:</p> <ul style="list-style-type: none"> • To name and explain the functions of some parts of a flower. 			
<p>TRANSFERABLE SKILLS: Pupils will be able...</p> <p>Communicative skills:</p> <ul style="list-style-type: none"> • To relate observations, give accounts of experiences and develop argument. <p>Methodological skills:</p> <ul style="list-style-type: none"> • To access and communicate information using different supports including ICT tools to learn. <p>Personal skills:</p> <ul style="list-style-type: none"> • To interpret and use the knowledge about facts and processes to predict consequences and take reflexive action in order to preserve and improve living conditions. 			
<p>Aims:</p> <ul style="list-style-type: none"> • To recognise the parts of the flower and their functions. Flowers have structures that allow them to be pollinated. • To deconstruct and analyse a flower, observe and discover the different parts of a flower • To Learn that plants produce flowers which have male and female organs, seeds are formed when pollen from the male organ fertilises the ovum (female) • To explain the life cycle of flowering plants including pollination, fertilisation, seed production, seed dispersal and germination 			



TEACHING OBJECTIVES	LEARNING OUTCOMES Children will be able to:	COMMUNICATION
<p>A.CONTENT</p> <ul style="list-style-type: none"> - The flower and its parts. - Functions of the parts of the flowers. - Recognise the flower parts on a real one. 	<p>A.CONTENT</p> <ul style="list-style-type: none"> - Name the parts of the flower <i>eg stamen, stigma, style, petal, sepal, ovary, carpel.</i> - Describe and explain the functions of each part of a flower. 	<p><i>Language OF learning:</i></p> <p><u>Key phrases needed:</u></p> <ul style="list-style-type: none"> - I think ... is a ... - Why? Because. - is called - consist of which <p><u>Key vocabulary:</u></p> <ul style="list-style-type: none"> - Parts of a plant: - Functions of parts of plants.
<p>B.COGNITION</p> <ul style="list-style-type: none"> - Apply newly understood concepts. - Identify by observation the parts of a flower. - Illustrate the functions of each different part in a flower. 	<p>B.COGNITION</p> <ul style="list-style-type: none"> * Identify the main elements of a flower. * Relate the functions of each part. * Use discussion to gain and understanding the functions of parts of flowers. * Apply memorised key vocabulary and phrases in different contexts. 	<p>Language FOR learning:</p> <ul style="list-style-type: none"> - Language to answer questions. - Language to express their opinions. - Language to explain the functions of a flower. <hr/> <p>Language THROUGH learning:</p> <ul style="list-style-type: none"> - Use of dictionaries for vocabulary extension. - Language to carry on worksheets and presentations.
<p>CULTURE: Pupils will appreciate better:</p> <ul style="list-style-type: none"> • To value the importance of plants • Respect for living things and realise the need of taking care of plants. • How to be responsible and accurate in carrying on an investigation. • Appreciate and demonstrate working in a cooperative group. • Recognize some plants from their own country and from England. 		
<p>ASSESSMENT CRITERIA:</p> <ul style="list-style-type: none"> • Pupils should be able to name the different parts of a flower, recognise if it is a simple or complex flower and justify why it is. • Prepare a report identifying each part of a flower and its functions. • See whether they can explain the reproduction process of a plant, identifying the different parts of flower. • Students will be collecting observations work in a folder as well as keeping notes of what they learn on their Science notebook. 		



TOPIC: POLLINATION, FERTILISATION & SEED DISPERSAL	LESSONS 6, 7 & 8	TIMING 3 sessions	LEVEL: 5th KS 2 year 1
KEY SKILLS Children are expected to learn how the events taking place at pollination lead to seed formation and how seeds are dispersed.			
TRANSFERABLE SKILLS Communicative skills: <ul style="list-style-type: none"> Report observations giving accounts of experiences and develop arguments. Methodological skills: <ul style="list-style-type: none"> Provide practical classroom investigations about plants. Personal skills: <ul style="list-style-type: none"> Can apply study skills that include strategic thinking, cooperation and self-evaluation skills. 			
Aims: Children should be able to: <ul style="list-style-type: none"> Learn about the life cycle of a flowering plant - pollination, seed production, dispersal and germination. Explain that seeds are formed after pollination when pollen fertilises the ovum and that seeds can be dispersed in a variety of ways Describe the processes of pollination, fertilisation, seed dispersal and germination. Compare self-pollination and cross-pollination. 			
TEACHING OBJECTIVES	LEARNING OUTCOMES Children will be able to:	COMMUNICATION	
A.CONTENT - To understand that there are distinct processes and stages in every life-cycle. - To learn why some plants have flowers but not all. - To Understand the importance of pollen for plant reproduction and diversity.	A.CONTENT - Use terminology and processes related to plant pollination, fertilisation, germination and seed dispersal - Self.pollination and cross-pollination. - Seed dispersal: animals. Wind, water, self dispersal. - Explain reproduction in flowering plants. - recognise the huge variety of seeds from which plants grow.	Language OF learning: <u>Key phrases needed:</u>is/are pollinated by can be dispersed by This is so that takes place when is called / is done by <u>Key vocabulary:</u> Pollination, fertilisation, germination, seed dispersal, life-cycle, spread, insects & flowers names.	



TOPIC: POLLINATION, FERTILISATION & SEED DISPERSAL	LESSONS 6, 7 & 8	TIMING 3 sessions	LEVEL: 5th KS 2 year 1
<p>B.COGNITION</p> <ul style="list-style-type: none"> - Children will know that flowering plants reproduce. Children will know that insects pollinate some flowers and how this is done. - Children will know that seeds can be dispersed in a variety of ways. Children will be able to make careful observations of fruits and seeds, to compare them and use results to draw conclusions. 	<p>B.COGNITION</p> <ul style="list-style-type: none"> - Explain that seeds are formed after pollination when pollen fertilises the ovum - Use math skills by using a ruler to measure. - Identify different ways of seed dispersal - Understand the development of seeds and fruits. - Order correctly the steps in the life cycle of a plant. 	<p>Language FOR learning:</p> <ul style="list-style-type: none"> - Learning how to learn: pair and group work. - Analysing and checking previous hypothesis. - Sharing and comparing information. <hr/> <p>Language THROUGH learning:</p> <ul style="list-style-type: none"> - Use of dictionaries, booklets, ICT for extension research. - Language revised by the teacher and the learners during the lesson. 	
<p>CULTURE:</p> <ul style="list-style-type: none"> • The importance of plants to human beings to survive (eat, provide oxygen, monitor pollution levels, source of medicine...). • We need to protect habitat around the world. • Students develop understanding that many characteristics of an organism are inherited from the parents of the organism. 			
<p>ASSESSMENT CRITERIA:</p> <ul style="list-style-type: none"> - Mainly through observation and questioning - a printout of the pupils work at various stages can be kept as a record of achievement. - I will use students' activity worksheets, flower diagrams, displays. - Their participation in the class discussion to assess their understanding of the topic. 			



TOPIC: ASEXUAL REPRODUCTION	LESSONS 9 & 10	SESSION 2 sessions	LEVEL: 5 th
<p>KEY SKILLS Extracting conclusions that make it possible to take decisions for acting.</p>			
<p>TRANSFERABLE SKILLS</p> <p>Communicative skills:</p> <ul style="list-style-type: none"> To report observations giving accounts of experiences and develop arguments. <p>Methodological skills:</p> <ul style="list-style-type: none"> To apply study skills that include strategic thinking and cooperation and self-evaluation skills. <p>Personal skills:</p> <ul style="list-style-type: none"> To create, develop and assess collective projects with confidence, responsibility and critical thinking 			
<p>Aims: Students will be able to:</p> <ul style="list-style-type: none"> Describe various types of asexual reproduction that occurs in plant species and various methods for the asexual propagation of plants. Students will be able to explain that asexual reproduction results in a rapid increase of cells that are identical to the parent. They will be able to discuss the advantages and disadvantages associated with sexual and asexual reproduction. To grow a plant by vegetative propagation and understand why it might be advantageous to do so. To produce a new plant by fragmentation. 			
TEACHING OBJECTIVES	LEARNING OUTCOMES Children will be able to:	COMMUNICATION	
<p>A.CONTENT</p> <ul style="list-style-type: none"> Identify different methods of reproduction in flowering plants. Describe that in asexual reproduction all the inherites traits come from a single parent. 	<p>A.CONTENT</p> <ul style="list-style-type: none"> Explain how one plant uses both sexual and asexual reproduction. Name some of the asexual methods of plant reproduction and explain them. 	<p><i>Language OF learning:</i></p> <p><u>Key phrases needed:</u> There is /There are. reproduces from reproduce by</p> <p><u>Key vocabulary:</u> Asexual (vegetative) reproduction, offspring, rhizomes,tubers, runners, plantlets, bulbs, corns, cutting,grafting, soil, geranium(pelargoniums).</p>	



<p>B. COGNITION</p> <ul style="list-style-type: none"> - To select a propagation method which is appropriate for the plant to be propagated. - How to carry out an investigation.. - Compare how sexual and asexual reproduction passes genetic information from parent to offspring. 	<p>B. COGNITION</p> <ul style="list-style-type: none"> - Successfully start a new plant by any means of vegetative propagation, from cuttings. - Identify different ways of asexual reproduction. - Transfer key language. 	<p>Language FOR learning:</p> <ul style="list-style-type: none"> - Language to express opinions and hypothesis: <i>I think that...</i> <i>In my opinion...</i> - Language to express cause-effect and conclusions.
<p>CULTURE:</p> <ul style="list-style-type: none"> • We need to protect habitat around the world. • Develop understanding that many characteristics of an organism are inherited from the parents of the organism. • Respect for the principles of turn-taking. • Interest in helping other pupils. 		<p>Language THROUGH learning:</p> <ul style="list-style-type: none"> - Language to ask for something. - Language to carry on worksheets and presentations. - Language to report the project done.
<p>ASSESSMENT CRITERIA:</p> <ul style="list-style-type: none"> - Class participation and work. - Observation during the activities. - Peer and self-evaluation. - Conduct an investigation <i>to demonstrate the asexual reproduction of a geranium from a cutting.</i> 		



Exploring Plant Reproduction and Seed Dispersal

<http://www.evergreen.ca/en/lg/lessons/seed-prod.html>

- Students should have prior knowledge of the following terms and processes: sexual reproduction in angiosperms, gymnosperms and spore-bearing plants; asexual reproduction in plants (from roots, stems and leaves); flower parts and functions (receptacle, corolla, petals, calyx, sepals, stamen, anther, filament, pistil, stigma, style, ovary); adaptations for plant reproduction and seed dispersal.
- Angiosperms are flowering plants that contain both the female reproductive organ (pistil) and the male reproductive organ (stamen). The seeds form inside the flower and become enclosed in a case when mature.
- Gymnosperms do not produce flowers. Most produce seeds inside cones. The seeds have a protective coat but they are not enclosed in a case (e.g. conifers such as pine and spruce).
- Mosses, liverworts and ferns reproduce sexually through spores.
- Asexual reproduction, or vegetative propagation, involves forming new plants from pieces of root (e.g. poplar trees), stem (e.g. strawberry) or leaf (e.g. Bryophyllum).
- The colour, shape and size of flowers is related to how they are pollinated. Insect-pollinated flowers usually have very showy, large colourful corollas that attract insects visually and act as landing platforms. They are usually scented and often contain nectar. Flowers pollinated by butterflies are frequently red. Those pollinated by moths are often white.
- Flowers that attract birds and bats often need to have large petals for landing.
- Wind-pollinated flowers are designed differently. They are often missing the calyx and corolla and have no nectar. Their stigmas are frequently large and feathery. They produce large amounts of pollen. Maple trees produce their flowers in clusters at the tips of branches in early spring.
- There are many mechanisms for seed dispersal:
 - *Wind* - helicopter blades of maple seeds; silky white tufts of dandelion and milkweed seeds act like parachutes.



- *Animals* - spines, hooks and barbs help some seeds to hitch hike on fur, feathers and clothes (e.g. burdock burr); some seeds have sticky substances that cling to passing animals; seeds may be dispersed through bird and mammal droppings; uneaten buried caches of seeds and nuts made by mice, squirrels and some birds develop into plants.
- *Water* - floating coconuts, water lilies and purple loosestrife use water to disperse seeds.
- *Tossed by Plants* - touch-me-not (jewel weed) and pea plant toss their seeds when the pods explode.
- Conifers reproduce by seeds that are formed in cones. A cone is made of scales. Scales are modified leaves. Cones are produced by the sporophyte, usually in the spring. A sporophyte is a life-cycle phase of plants which have diploid nuclei; during this phase, spores are produced. The wind transfers pollen from male cones to female cones that display open scales.
- The pine tree produces soft male cones in clusters at the base of the new spring shoots. These cones last only one or two weeks. Each of their scales produces haploid male spores by meiosis. These spores are called pollen grains. Before a pollen grain is shed, the cell inside divides to form the male gametophyte. This gametophyte is protected by a thick wall around the pollen grains. In pine, part of the wall bulges to form two wings.
- The female cones, (or seed cones), of conifers are much larger and harder than the male cones. In many species, they become quite woody as they mature. The typical "pine cone" that one might collect on a forest floor is a woody female cone.
- Once some pollen reaches the female cones, the scales close up. The pollen grains germinate inside the cone.



Example of sentences that you can use.

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1. I can definein English.
2. I can recognise.....
3. I can name thein English
4. I can identify.....using a key.
5. I can remember.....
6. I know the main features of
7. I know whatis/are.
8. I can describe.....in English
9. I can classify.....
10. I know about.....
11. I know how.....
12. I can collect.....
13. I can find information about.....
14. I can present that information in English.
15. I work cooperatively
16. I can list.....
17. I can explain.....
18. I know where.....
19. I can help my classmates.
20. I need some classmates' help.
21. I can divide
22. I understand the teacher explaining in English.