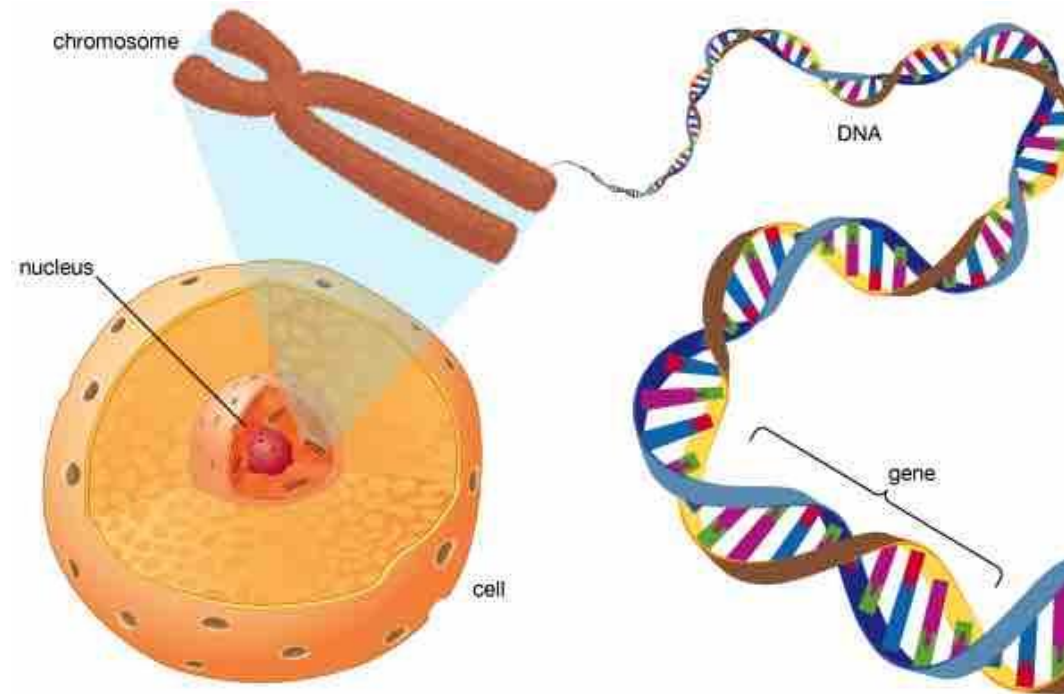




HOW DO ORGANISMS REPRODUCE ?



Escola Sant Bernat Calvó
Cristina de Castro Pedraza
Generació Plurilingüe (GEP)

Year 1
2018-2019



GEP 1	Task 1: Input & Cooperative /Collaborative learning in CLIL
Title	How do organisms reproduce?
Course / year / age	Course 2018-2019. 6th grade
Timing	2 sessions.
Collaboration	--
Description	All organisms are reproduced, in one way or another, to ensure the survival of their species. We will work on the different types of reproduction, as well as the reproduction of plants and animals, and we try to answer our students' questions about the topic.

Session 1	Activity 1	Brain storming:
	15'	<p>At the beginning of the lesson, the class will do a Think-Pair-Share activity to discuss different questions the teacher is going to ask them.</p> <p>Think-Pair-Share (TPS) is a collaborative learning strategy in which students work together to solve a problem or answer a question. This strategy requires students to think individually about a topic or answer to a question; share ideas in pairs and finally they put all the ideas in common with the whole group.</p> <p>Questions:</p> <ol style="list-style-type: none">1. Think in two words related with reproduction. (they can search it in the dictionary)2. What is reproduction? (firstly, we give them time to think, and then pieces of paper with the definition disorganized)



Activity 2 **Watch it!**

15'

In this activity, students will be watching a short video (5 minutes) explaining two types of reproduction.

<https://youtu.be/f0x7OPbwBZY>

Students will be working in cooperative base groups to better understand asexual and sexual reproduction. We are going to give them papers with the different characteristics of the two types of reproduction. They have to read them before watching the video and, then, while they are watching it, they have to put the papers on asexual or sexual column. Then they have to answer questions related to the video and write their answers on their worksheet.

The questions are:

- How does genetic variation allow humans to survive long-term?

Which type of reproduction is responsible for genetic variation?

Activity 3 **Explore it!**

25'

Students will be working in cooperative expert groups to better understand asexual and sexual reproduction. The activity consists in compare 3 organisms by reading a short description of each and how they reproduce. Then will classify whether they reproduce sexually or asexually or even both. Students will follow the steps and record their observations on their worksheet.

How we are going to do the activity?

- Each member of the base group is going to have one different text related to an organism and how it reproduces. Then the students are going to join with the ones that have the same text, making cooperative expert groups. Each group has to read the text, classify the organism considering how it reproduces and talk and write the characteristics of the reproduction in a worksheet. Then they are going to join back with their cooperative base group, and each member is going to explain to the others the characteristics of each reproduction. Students will be comparing 3 organisms by reading a short description of each and how they reproduce. Students will classify whether they reproduce sexually or asexually or even both. Students will follow the steps and record their observations on their worksheet



Session 2	Activity 4	Previous revision:
	15'	<p>Before starting any activity, the students have to answer some questions to revise the previous session, using the Kahoot. We are going to play with an ICT tool, to catch their attention and motivate them to start with the second session.</p> <p>The questions are:</p> <ul style="list-style-type: none">• What is the meaning of reproduction?• How do organisms reproduce?• What is the difference between asexual and sexual reproduction?• What are advantages of asexual reproduction?• (some images of different organisms and they say if they are sexual/asexual/both)
	Activity 5	Research it!
20'	<p>On the wall, the students will have a Venn diagram with asexual, sexual and both areas divided. We are going to have 5 tables in front of the diagram, with four pictures of different organisms on it. In cooperative base group, the students have to classify them in the correct group of reproduction. If they have doubts, they can look for the information in the tablet that they have on the table. The goal is to place all the pictures without mistakes.</p>	
Activity 6	Reproduction dictogloss:	
20'	<p>The teacher provides the students with images related with the reproduction of an organism. Then the teacher is going to read the text related with the reproduction of this organism and the students listen and put the pictures in order of appearance.</p>	



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Academic content:

What are the students learning and what are they learning to do?

At the end of this sexual and asexual reproduction sessions, students will be able to compare and contrast sexual and asexual reproduction and describe the advantages and disadvantages of each type of reproduction.

Language:

What are the students practicing or learning to do?

They are going to learn the different types of organisms' reproduction. Which are the differences between them, and the advantages and disadvantages of each one.

In what way is this lesson plan a good example of what we learnt in the GEP course session?

In this lesson plan we try to make different active activities, combining individual and cooperative work of our students.

Other important information

ANNEXES (materials, handout, pictures... if not possible to include in the activity section.)

PDF DOCUMENT



Self-assessment Checklist

Task 1: Input & Cooperative /Collaborative learning in CLIL	YES/NO
1. Students are presented with multimodal and varied input (spoken, written, visual, hands-on...)	Yes
2. The input presented is used to help learners understand ideas and construct meaning	Yes
3. The input is presented at the right cognitive level and the right language level , i.e. it is neither too challenging in terms of content nor too difficult in terms of language.	Yes
4. Students are helped in some way to understand , i.e. input is made comprehensible	Yes
5. Students are helped in some way to process the input presented, i.e. activities or questions make students think and construct meaning.	Yes
6. The input and activities presented cater to multiple intelligences	More or less
7. Students are presented with good questions (explicit, implicit and referential) that help them process input and that challenge them not only to understand, but to think, create...	Only one activity



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8. A variety of collaborative learning strategies are used throughout the session.	Yes
9. At least one of the activities presented requires cooperation among students.	Yes
10. Students are explicitly taught how to work in groups (or pairs).	Yes
11. Students are explicitly guided to succeed in group/pair work discussions and interactions . Clear support to guide their interactions is provided.	Yes
12. At least one ICT tool is used to promote digital collaborative learning .	Yes "Kahoot"



GEP 1	Task 2: Reading, writing and Assessment in CLIL
Title	How do organisms reproduce?
Course / year / age	Course 2018-2019. 6th grade
Timing	2 sessions.
Collaboration	--
Description	All organisms are reproduced, in one way or another, to ensure the survival of their species. We will work on the different parts of the life cycle of flowering plants, as well as the parts of a flower and the differences between viviparous, oviparous and ovoviviparous animals.

Session 1	Activity 1	Revision:
	10'	Considering that in previous sessions we did a dictogloss related to the life cycle of a flowering plant, at the beginning of the lesson, we make different questions to the students to revise the previous learning. We use Plickers, an ICT tool, to make the questions to the students. The class will do a Think-Pair-Share activity to discuss different questions the teacher is going to ask them, and choose the correct answer.
	Activity 2	Read and review
	15'	Students will be working in cooperative base groups to better understand the text. They have to read the text and try to find the different parts of the life cycle of flowering plants. Then they have to write them in the correct place.



	Activity 3	Read and match 25' Students will be working in cooperative expert groups to understand better the text. We are going to give to each group different parts of the text (it consists in the definition of 3 parts of the flower). They have to read the definition and to put the word in the correct place. The busy bee teacher is going to check if they have it correct, and then they go back to base groups and exchange the different information they have.
Session 2	Activity 4	Write it! 15' We are going to divided the activity in two parts. The first one consists in reading the text all together and check if they understand all the information. 30' Then, in pairs, the students have to write a text related to one animal, as the one they have as a model.
	Activity 5	Put in common 15' The students are going to explain to their classmates what type of animal they have (viviparous, oviparous or ovoviviparous) and why.
Session 3	Activity 6	Assess it! We are going to assess our students learning using an ICT tool called Plickers. They have to answer different questions in a questionnaire using a card.



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Academic content:

What are the students learning and what are they learning to do?

At the end of this reproduction sessions, students will be able to compare and contrast viviparous, oviparous and ovoviviparous animals, as well as the different parts of a flower and how they reproduce.

Language:

What are the students practicing or learning to do?

They are going to learn the different types of organisms' reproduction. Which are the differences between them, and the advantages and disadvantages of each one.

In what way is this lesson plan a good example of what we learnt in the GEP course session?

In this lesson plan we try to make different active activities, combining pair and cooperative work of our students.

Other important information

ANNEXES (materials, handout, pictures... if not possible to include in the activity section.)

PDF DOCUMENT





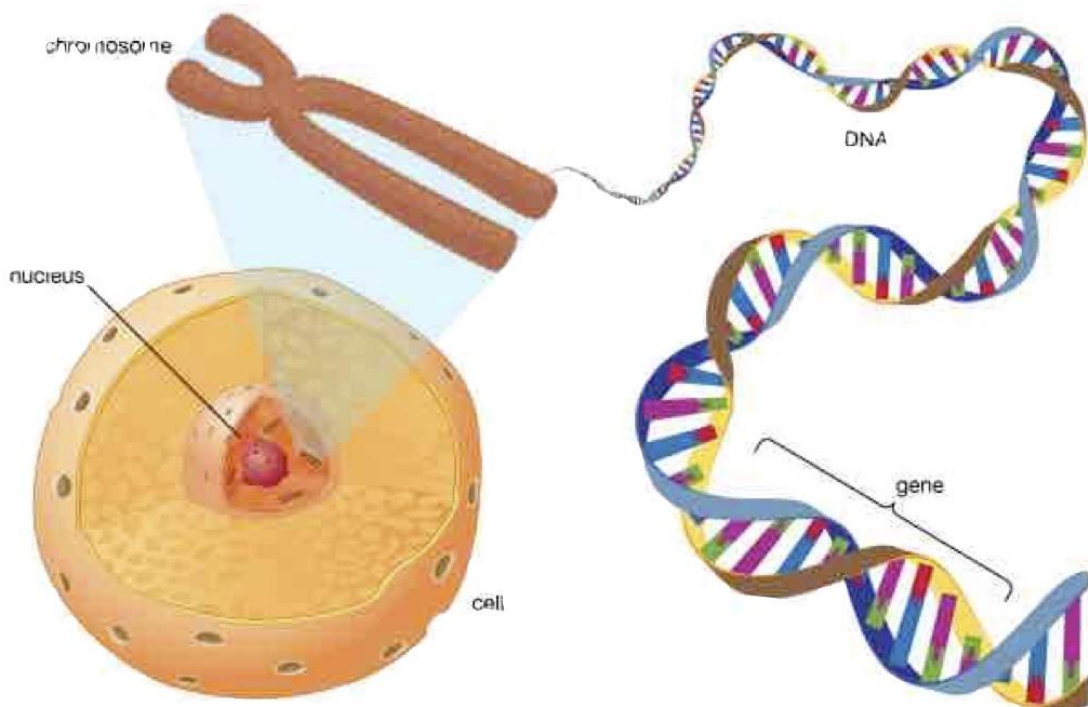
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Self-assessment Checklist

Task 2 : Reading, writing in CLIL and Assessment	YES/NO
1. Support is provided to help students read and understand texts.	Yes
2. Before-, during- and after- reading activities are prepared.	Yes
3. The materials use visuals to support comprehension.	Yes
4. The writing process takes place in joint collaboration with the teacher (modelling)	Yes
5. Support is provided to help students write (the students are provided with language patterns, language frames, vocabulary banks...)	Yes
6. The teacher uses different strategies to help students throughout the process of reading and writing	Yes
7. The teacher has previously predicted the language the students will need when carrying out the different tasks successfully and, therefore, is aware of the content-obligatory language .	Yes
8. At least the teacher uses 1 type of assessment (self-assessment, teacher assessment or co- assessment)	Yes
9. At least teacher used 1 type of designed assessment tool during the sessions (rubric, digital app, checklist, personal dossier...)	Yes



UNIT 1

HOW DO ORGANISMS REPRODUCE?



Name: _____

Surname: _____



BRAIN STORMING



Pair work activity

You have 10 minutes to think about these questions, share your ideas and write an answer.

1. **Think in two words related with reproduction.** If you need some help, you can search it in the dictionary.

* Our words are: _____

* Other important words: _____

2. **What is reproduction?** (Now you have to make a definition without looking at dictionaries, encyclopedia or internet).

* Reproduction is _____

Now, open the envelope and order the sentences to guess the definition of reproduction and write it:

* _____



DEFINITION OF REPRODUCTION:

Reproduction (or procreation or breeding) is the biological process by which new individual organisms – "offspring" – are produced from their "parents".

There are two forms of reproduction: asexual and sexual

Reproduction (or procreation or breeding)

is the biological

process by which new individual organisms – "offspring" –

are produced from their "parents".

There are two forms of reproduction:

asexual and sexual.



WATCH IT!



Cooperative base group work activity

Watch the video and classify the different characteristics of asexual and sexual reproduction.

SEXUAL	ASEXUAL

Now answer this questions:

* How does genetic variation allow humans to survive long-term?

* Which type of reproduction is responsible for genetic variation?



TO CUT:

SEXUAL	ASEXUAL
Requires 2 parents	One parent
DNA different from parents.	DNA identical to parent.
Diverse population	Uniform population
Requires more time and energy to reproduce	Requires less time and energy to reproduce.
Allows species to evolve, improving survival.	Mutations remain in the population.



EXPLORE IT!



Cooperative expert and base group work activity

Read the text about this organism and try to guess which type of reproduction it makes and, then, write the characteristics of its reproduction.

The diagram illustrates the life cycle of a jellyfish. It starts with a medusa (adult jellyfish) at the top, which releases eggs and sperm. These develop into a planula larva, which is a small, oval-shaped organism with cilia. The planula larva settles on a surface and grows into a polyp, which is a tube-like structure with tentacles. The polyp can reproduce asexually by budding, forming a budding polyp. The budding polyp eventually develops into an ephyra, which is a young jellyfish. The ephyra grows into the medusa stage, completing the cycle.

Jellyfish reproduction involves several different stages. In the adult, or medusa, stage of a jellyfish, they can reproduce sexually by releasing sperm and eggs into the water, forming a planula. In this larval stage of jellyfish life, the planula hooks on to the bottom of a smooth rock or other structure and grows into another stage of jellyfish life, the polyp--which resembles a miniature sea anemone. During this stage, which can last for several months or years, asexual reproduction occurs. The polyps clone themselves and bud, or strobilate, into another stage of jellyfish life, called ephyra. It is this form that grows into the adult medusa jellyfish.

Which type of reproduction it makes? _____

Characteristics:



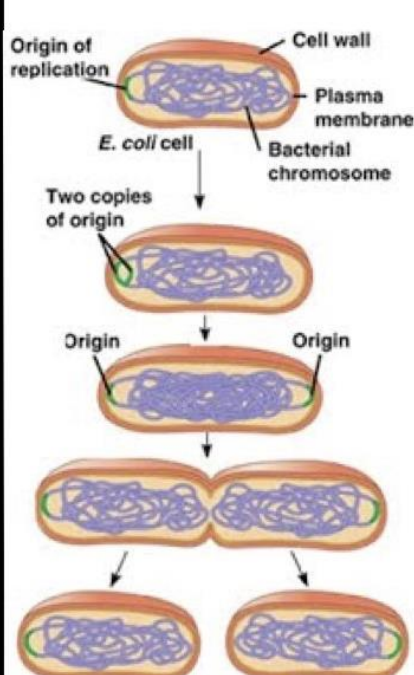


EXPLORE IT !



Cooperative expert and base group work activity

Read the text about this organism and try to guess which type of reproduction it makes and, then, write the characteristics of its reproduction.



Most bacteria rely on binary fission for propagation. Conceptually this is a simple process; a cell just needs to grow to twice its starting size and then split in two. But, to remain viable and competitive, a bacterium must divide at the right time, in the right place, and must provide each offspring with a complete copy of its essential genetic material. Bacterial cell division is studied in many research laboratories throughout the world. These investigations are uncovering the genetic mechanisms that regulate and drive bacterial cell division. Understanding the mechanics of this process is of great interest because it may allow for the design of new chemicals or novel antibiotics that specifically target and interfere with cell division in bacteria.

Which type of reproduction it makes? _____

Characteristics:



EXPLORE IT !



Cooperative expert and base group work activity

Read the text about this organism and try to guess which type of reproduction it makes and, then, write the characteristics of its reproduction.

The diagram illustrates the life cycle of a flowering plant. It starts with a 'mature sporophyte' (the whole plant). A close-up shows 'pollen' grains on the 'stigma' of the 'stamen'. A 'pollen tube' grows from the pollen grain down to the 'ovule' in the 'ovary'. This leads to a 'seed' inside a 'fruit'. The 'seed' is shown as a 'germinating seed' and then as a 'seedling' with roots and leaves. The cycle then returns to the 'mature sporophyte'.

Reproduction in plants takes place in the flowers. It is the reproductive part of a plant. In order to form a zygote, male gametes in pollen grains have to fuse with egg in the ovule. This is achieved by the process called pollination. Pollination is the process of transferring pollen grains from the anther – male part of a flower, to the stigma – female part of a flower. Depending on the pollen landing, pollination can be classified into two types: Self-pollination and Cross-Pollination. Generally, pollination takes place with the help certain agents so called pollinators. They include insects, water, birds, the wind, etc.

Once pollen gets transferred to stigma the male gametes from pollen grains release and fuses with egg in the ovule to form a zygote. This process of fusion of gametes is called fertilization. The zygote thus formed, divides and develops into an embryo, and later into a seed. The ovary develops into a fruit.

Which type of reproduction it makes? _____

Characteristics:





READ AND REVIEW



Cooperative base group work activity

Read the text related to the reproduction of the plant and try to write the different parts of the life cycle of a flowering plant process.

The life cycle of a flowering plant

The first stage of reproduction in flowering plants is called '**pollination**'. This is when the pollen produced on the anther of a flower moves to the stigma.

If pollen moves from the anther to the stigma on the same flower (or a flower on the same plant), it is called '**self-pollination**'. If the pollen is transferred from the anther to the stigma on another plant, it's called '**cross-pollination**'.

There are two main ways that flowers are pollinated:

- **Insect-pollinated flowers**
- **Wind-pollinated flowers**

Once the pollen grain lands on the stigma of the same species of plant, a pollen tube grows down from the grain, through the style and into the ovary. Then, male '**gametes**' (reproductive cells) pass from the pollen grain along the tube to the ovary, where they join with female gametes in the '**ovules**'. This process is called '**fertilisation**'.

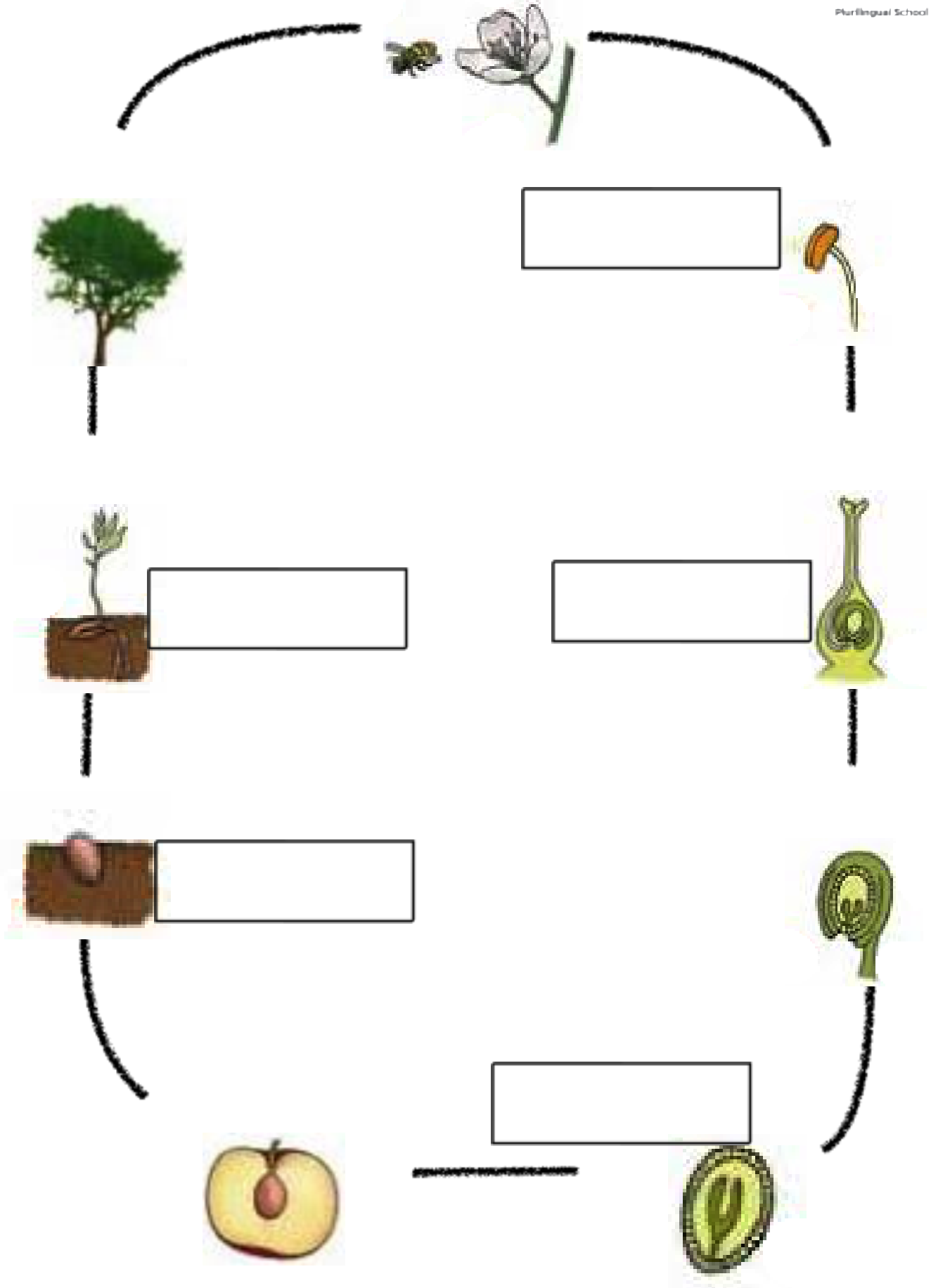
Then, it **develops into a seed**. For the seeds to grow into healthy new plants, they must be '**dispersed**' or spread away from each other and their parent plant.

When a seed settles in suitable ground, it breaks open and the embryo starts to grow. This part of the process is called '**germination**'. The seed will only germinate, however, if the soil is healthy, warm enough and if there is access to water.

Roots grow down into the ground, taking up water and nutrients, and a shoot grows up through the soil towards the sky.

The shoot will develop into a stem, transporting water and minerals from the roots up to the rest of the plant. The stem will also eventually support leaves to make food for the plant through a process known as **photosynthesis***

The plant will continue to grow until it is mature and ready to reproduce again. And what next? You guessed it...the **new plant produces beautiful flowers** and the cycle starts all over again.





READ AND MATCH



Cooperative expert and base group work activity

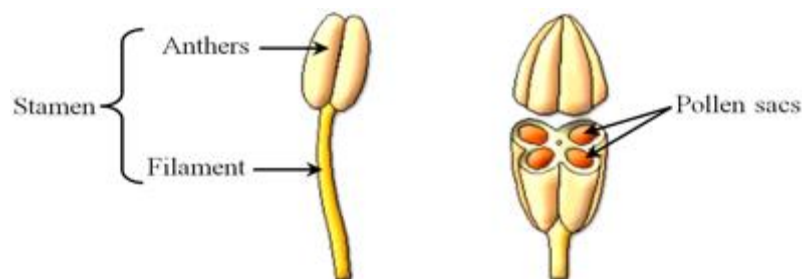
Read the text and try to write the different parts of the flower.

The parts of the flower

Most flowers have four main parts: sepals, petals, stamens, and carpels. The stamens are the male part whereas the carpels are the female part of the flower. Most flowers are hermaphrodite where they contain both male and female parts. Others may contain one of the two parts and may be male or female.

The different parts of a flower are:

- **Peduncle or Pedicel:** This is the stalk of the flower.
- **Receptacle:** It is that part of the flower to which the stalk is attached to. It is small and found at the centre of the base of the flower.
- **Sepals:** These are the small, leaf-like parts growing at the base of the petals. They form the outermost whorl of the flower. Collectively, sepals are known as the calyx. The main function of the calyx and its sepals is to protect the flower before it blossoms (in the bud stage).
- **Petals:** This layer lies just above the sepal layer. They are often bright in colour as their main function is to attract pollinators such as insects, butterflies etc to the flower. The petals are collectively known as the corolla.
- **Stamens:** These are the male parts of a flower. Many stamens are collectively known as the androecium. They are structurally divided into two parts:
 - **Filament:** the part that is long and slender and attached the anther to the flower.
 - **Anthers:** It is the head of the stamen and is responsible for producing the pollen which is transferred to the pistil or female parts of the same or another flower to bring about fertilization.

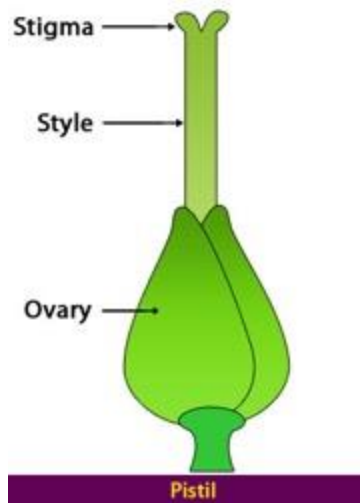


Structure of stamen

(Source: Wikipedia)

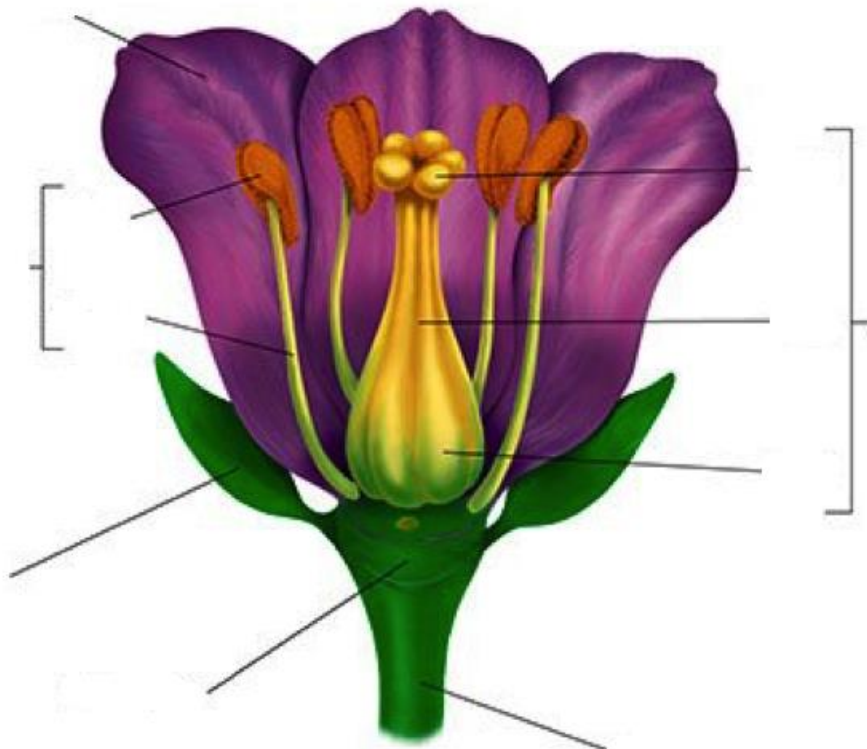


- **Pistil:** This forms the female parts of a flower. A collection of pistils is called the gynoecium.
Pistil consists of four parts



(Source: Britannica)

- **Style:** is a long slender stalk that holds the stigma. Once the pollen reaches the stigma, the style starts to become hollow and forms a tube called the pollen tube which takes the pollen to the ovaries to enable fertilization.
- **Stigma:** this is found at the tip of the style. It forms the head of the pistil. They are responsible to begin the process of fertilization.
- **Ovary:** they form the base of the pistil. The ovary holds the ovules.
- **Ovules:** these are the egg cells of a flower. They are contained in the ovary.

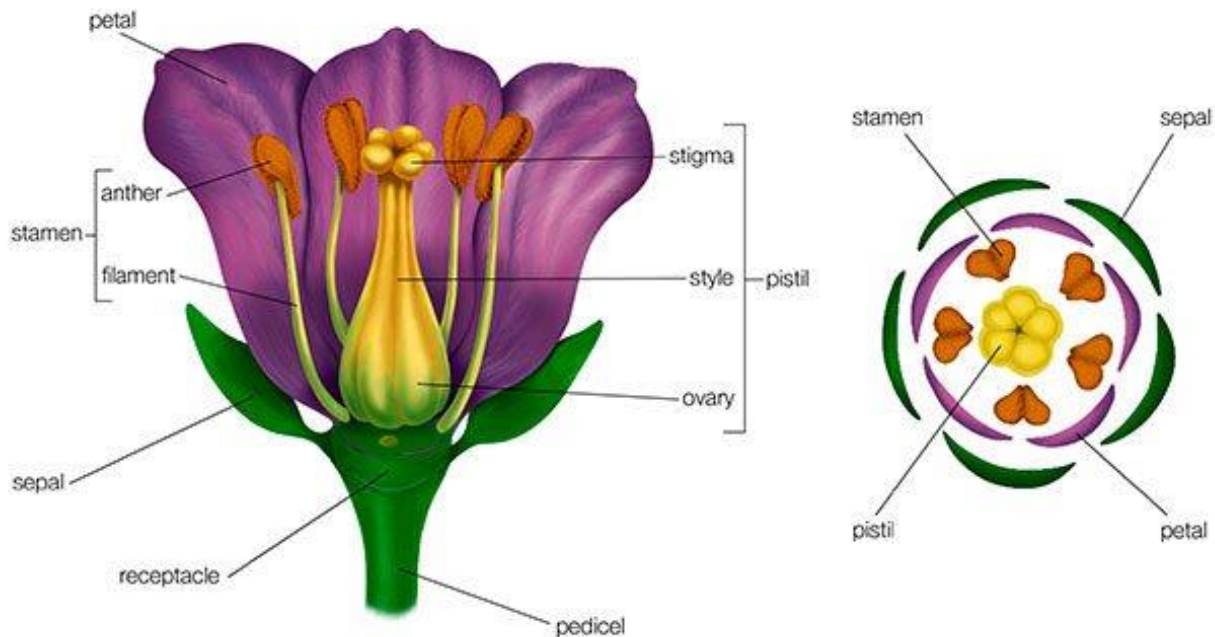




The parts of the flower

If you thought that flowers were just a pretty bunch of colourful petals, then think again! Flowers are actually very complex, made up of different parts that all have important jobs to do.

Inside, they have **male and female parts** which enable the plant to reproduce. Let's take a closer look...



Petal: large, brightly colored petals are used to attract insects

Stamen: the male part of the plant

Anther: produces grains of pollen

Filament: supports the anther

Pistil: the female part of the plant, sometimes called the 'carpel'

Stigma: collects pollen grains

Style: allows pollen to pass to the ovary

Ovary: produces seeds inside tiny 'ovules'

Sepal: found outside the petals, the sepal protects the flower when it's unopened

Receptacle: attaches the flower to the stem of the plant

Pedicel: a stalk that supports a single flower



WRITE IT!



Pair work activity

Read this information related to the differences between the animals taking into account where the embryo grows. Then write the animal's card.

Oviparous, viviparous and ovoviviparous animals

Most animals reproduce sexually. This method requires a male and a female of the same species. The ova, or the eggs, produced by the female, are fertilised by the sperm, produced by the male. Animals can be oviparous, viviparous or ovoviviparous.

Oviparous animals

The embryo grows outside the female's body, inside an egg. The shell or jelly around the egg protects the embryo. The egg also contains all the nutrients it needs to grow. These eggs will later hatch into new offspring.

Viviparous animals

Almost all mammals are viviparous. The embryo develops inside the mother and she gives birth to live offspring. All baby mammals, including monotremes, drink their mother's milk until they can find their own food.

Ovoviviparous animals

A few species are ovoviviparous. These animals produce eggs but the eggs develop and hatch inside the mother. Later, the mother gives birth to live offspring.



Example (we are going to use it as a model)



Tigers are **viviparous**, because the embryo develops inside the mother. Months later, she gives birth to live cubs. The tigers have a gestation period of, approximately, 16 weeks.

















