

Task Sheet for Teachers // Module 2 – Series of photos

“Seasonal changes of plants and animals” // “Organisms in Action”

Preliminary note: This task sheet is for you, the teacher, and gives a first overview of the main task ideas. Although the task sheet is complete, as always we would appreciate your comments and ideas for improvement. Thank you.

Learning objectives – Students...

- explore and describe how plants or animals change through the seasons and how they survive the winter in their local environment through a series of still images / animated still images or video techniques like slow motion
- explore and describe the movement of organisms like plants, fungi and animals through changing the speed of video (see page 4).
- build a capability for observing organisms in the field and a capacity to explain and present their experiences and what they have found, through media,.

Examples with plants:

- examine how flowering plants survive the winter, what part of the plant survives the winter and what happens when they emerge from the soil
- examine how new plants grow from seeds, and hibernating plants grow from buds, either in the soil or on branches

Examples with animals:

- examine how birds and mammals change colour according to the season, mainly for camouflage but also for courtship, examples could be foxes and wild rabbits
- examine animals that hibernate or sleep through the coldest months of winter and emerge from their hives or burrows when it gets warmer, such as porcupines, bats and insects
- animal movements can include birds flying, snails crawling and dogs running or drinking (tongue movement) or bees looking for nectar on flowers. From the biology perspective we are interested in the physical adaptation for specific movements. For example, the rasping tongue of the snails has a very special structure.

The second module is an introduction to filmmaking. For example, students will combine still images to create moving images. They will become aware that a film is a combination of still images (there are no “moving” images). They will learn how things come to life by making changes from one still image to the next. The second module explores how changing the speed of a video can show biological phenomena that normal speed visible by the eye does not allow us to see. Slow motion can help to see details that happen so quickly that the eye cannot see them in real-time; time-lapse or fast speed can show very slow movements, too slow for the eye to see, into discernible movement, very nicely.

Step-by-step guide

Step 1 Preparation

Get permission

- Get written permission from parents (template provided).

Introduce vidubiology to the students

focus on the topic: Seasonal changes of plants and animals

- Introduce the content (connected with the respective curriculum): Exploring changes by season takes time but can be sped up by taking samples into the classroom such as twigs which are put into water where the leaves start to grow and eventually roots may even begin to grow. Grasses, like straw and mown grass can be brought in to the class. Once these samples are put in water (straw infusion) they are usually crawling with life. This could also be done as a homework where each student takes a sample home.

focus on the topic: Organisms in action

- Introduce the content (connected with the respective curriculum): look into animal or plant locomotion and analyse the movements with high-speed (e.g. snails crawling, flower movement) or slow-speed video (birds flying, dogs running or drinking, flap movement in carnivorous plants)
- Introduce the production part (support material provided).
- If applicable, show examples and web pages from other European schools for inspiration.

Setting up the project

- The teacher sets up teams of 2 or 3 students and creates a timeline based on the topic and approach; the timeline can even span a whole school year if observations are done outside and extend over more than one season or few weeks if samples show short phenomena or are collected and brought into the classroom or at home.
- Teachers plan what kind of (biological) equipment would be useful for different topics.
- Teacher prepares the hardware the students will use.

Step 2 Planning	<p>Students plan the project (student sheet provided) <i>There are two ways to start the project planning phase</i></p> <ul style="list-style-type: none"> <input type="checkbox"/> <i>Students who did not work on module 1:</i> Students select and prepare their topic with the assistance from the teacher using a mind map to collect possible content ideas. <input type="checkbox"/> <i>Students who worked on module 1:</i> Students refer to the image selection in module 1 and describe possible phenomena that can be observed. <input type="checkbox"/> Students plan their approach (of investigation) or rather the observation of their phenomenon; starting with draft ideas and then taking it further in a structured way: thinking of the photos / video clips and how they are combined afterwards (look into technical support section) and prepare a material list <input type="checkbox"/> Teacher check the results of their planning and control the material lists
Step 3 Shooting	<p>Taking the photos / recording video clips (video tutorial, technology support sheet, student technical-info cards)</p> <ul style="list-style-type: none"> <input type="checkbox"/> Students take series of photos / video clips of phenomena with animals or plants following their project plan.
Step 4 Post-production	<p>Selecting the photos / videos and putting them together</p> <ul style="list-style-type: none"> <input type="checkbox"/> Students go through all the photos / video clips they have taken; evaluate which ones would be the best in describing the topic they have chosen and select their favourite photos / video clips <input type="checkbox"/> Students may create photo stories (support tutorial) or apply fast- or slow-motion effects
Step 5 Presentation	<p>Presenting the stories / videos in class (student sheet provided)</p> <ul style="list-style-type: none"> <input type="checkbox"/> Students present their outcomes, explain their phenomenon and judge each other's products. <input type="checkbox"/> Students reflect on their experience and what they have learnt. <input type="checkbox"/> Teacher moderates the presentations and brings together the biological findings. <input type="checkbox"/> Teacher uploads / emails videos to the vidubiology team; the teacher has the option to present the outcomes to the parents and / or also use them as learning resources for future lessons.

Share your results

Sharing the process and outcomes is an integral part of vidubiology projects. Videos can also be shared on Flickr but also other social platforms. Flickr (in comparison to Instagram) offers the opportunity that people can see the photos without logging in. Classes and / or students can create their own accounts. We would be happy to include your work in the project Flickr channel and our YouTube playlists:

<https://www.flickr.com/photos/vidubiology>

https://www.youtube.com/playlist?list=PLHgH52iw_33n17p3cVoYtjkj2-EfhCaPr

Technology support sheet: explanation of the techniques

The second module offers three different production methods: photo stories, time-lapse recordings and slow-motion videos. Each of the methods uses either still images which are animated in different ways or video clips which are changed through the use of different software:

- **Photo stories:** still images are put together with video editing software into a slide show style production. Students can add titles and music. Software solutions include iMovie (MacOS) or Open Shot and upcoming VideoLAN Movie Creator (Windows). Photo stories can also be easily produced with many free video editing apps (such as the Adobe Premiere Clip, Power Director, FilmoraGo or Movie Maker) or Windows 10 apps (such as Animotica or Movie Maker)
- **Time-lapse recordings:** Time-lapse recording refers to taking a still image in defined time lags (for example 10 seconds). Once the images are played back things come to life (you may be familiar with popular time-lapse recordings of clouds). Time-lapse can be useful for slow animal movements. Time-lapse can be completed with apps such as Framelapse. Better photo cameras often have a time-lapse feature included. They can be done in the old way with a remote timer which is connected to a still camera, this would need to be a SLR style camera.
- **Slow-motion** is used for the opposite effect where animal movements are fast. Videos can be easily slowed down with editing software or an app. Newer cameras and top smartphones offer slow motion recording where more frames per second and more details can be recorded.