



LESSON 1: WHY RIVERS ARE IMPORTANT

Aim

- To learn about and understand why rivers are important.

Lesson Objectives

- To define a river.
- To learn about the different reasons why rivers are important:
 - Water cycle - land drainage / source to sea / carry nutrients around Earth.
 - River ecosystems.
 - The various animals that live in a river ecosystem.

Assumed Prior Knowledge

- The water cycle.
- A brief understanding of what a river is.

Resources

- Diagram of the water cycle – this could be printed out and stuck into work books.
- Basic ecosystem worksheets.
- Video about the beavers in Cornwall - <https://www.youtube.com/watch?v=LeOmBbLwPm4> .
- 10 question quiz with answers.

Assessment

- Correctly labelling worksheets.
- Observed class discussions.
- 10 question quiz.
- Homework task –
 - To research a UK river: Where does it start, where does it finish, and how long is it?
 - Students are also asked to write a paragraph about why the river is important.

Lesson Outcomes

- To define a river.
- To name at least three reasons why rivers are important.
- To name at least three animals which live in a river ecosystem.
- To be able to demonstrate a basic understanding of how species co-exist within an ecosystem.
- To explain why beavers are important.

Differentiation

- Visual – PowerPoints, worksheets, video.
- Audio – Class discussion, pair work and listening to the teacher.



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Skills For Life

- Communication literacy – Speaking in pairs and as a group and writing.
- Reading and following instruction for tasks.

Curriculum Links

- Geography – The water cycle and land drainage.
- Science (Biology) – Discovering the basic principles of what an ecosystem is and how it works, including food chains.
- I.T. – Researching a river for the homework task.

All the blank worksheets for this lesson can be found as a separate download within the 'Lesson 1' page of the The Flood Hub KS2 Learning section. The answers for the worksheets can be found at the end of this document.

Key words within the PowerPoint lesson are highlighted in orange and the definitions of these words can be found in the glossary, which is available to download off the homepage.



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Notes for each slide – The teacher is to decide what is copied down in their workbooks.

Slide 1

- Slide containing the lesson aims and objectives.

Slides 2 and 3 – The water cycle

- Run through the slides with the class.
- The water cycle is the journey water takes, from land to the sky and back again. The cycle consists of evaporation, condensation, precipitation and collection.
- Rivers transport rain from where it falls, known as ‘the source’ to it’s destination which is the sea or a lake, known as the “mouth”.
- The rainfall collects minerals and nutrients from the land.
- Rivers drain the water from the land and transport these nutrients across landscapes around the world before returning the water to the sea where it can begin the cycle again.

Slide 4 – What is a river?

- Quick recap.
- This can be the start of the class discussion - the teacher to ask the class “what is a river?”.
- Once a few pupils have answered, the teacher can click through to the definition.

Slide 5 – Land drainage (runoff)

- Teacher to talk through the slide with the class with the aid of the diagram.
- How is run-off dealt with?
- Rain falls;
- Water runs from higher ground into the streams and tributaries;
- Some is stored in lakes and reservoirs
- The rest flows over the surface to the lowest point which is the rivers
- The rivers carry the water away and back to the sea
- The area over which this happens is called a catchment (sometimes referred to as a land drainage basin).
- Land drainage forms a part of the water cycle.
- As the water flows across land in into rivers, it comes into contact with different types of rocks, dirt, soil and organic matter and collects minerals and nutrients along the way.
- When the water reaches the river, the river collects the rocks, dirt, soil, organic matter, mineral and nutrients.
- When the river floods, the nutrient rich water spills onto the flood plain and seeps into the ground and makes it fertile. This is why floodplains next to rivers make good farming land.



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Slide 6 – Ecosystems: What is an ecosystem?

- Teacher to run through the slide with the class.
- “A river ecosystem is the environment in which plants and animals all live together and rely on each other in order to survive.”
- Within an ecosystem are food chains and webs, this is how the different plants and animals get their energy. They do this by eating each other.

What does this mean? (For teacher)

- River ecosystems are made up of the interactions between plants, animals, insects and micro-organisms, as well as the chemical reactions, bacteria and nutrients within water and wider environment.
- Within an ecosystem is a food chain – each plant, insect or animal or aspect plays a role in supporting others.
- “A biological community of interacting and interconnected organisms and their physical environment.”

Slide 7 – Ecosystems: What kind of animals live in a river ecosystem?

- This slide can be accompanied with class discussion.
- The pupils could be asked to raise their hand if they would like to name the animal. The name of the animal will be revealed one by one (from left to right).
- The children can discuss with the class what animals they have seen around rivers before and what other animals they think live in a river ecosystem.

Slide 8 – Worksheet: Basic river ecosystem

- This exercise can be completed in pairs and should take around 5 – 10 minutes.
- The pupils should place each word into the correct box to complete the sentence.
- After ten minutes, the answers should be checked altogether as a class – click to reveal the answers.
- The pupils should raise their hand if they would like to read out one of the boxes/sentences and add in the word that they think is correct.
- The teacher and pupils can then decide as a class whether it is correct.

Slides 9 and 10 – Beavers and beaver dams

- Beavers use branches and debris to build dams across watercourses such as rivers and streams.
- In periods of heavy rainfall, pools fill up behind the dams and this water is held back and slowly released. This helps prevent the water moving downstream and flooding towns and villages.
- Look at the difference in water levels upstream and downstream of the dam.
- Beavers have recently been introduced in some areas of the UK, after they almost became extinct due to hunting.



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Slide 11 – Cornwall Beaver Project Video

- As can be seen in this video, beavers can have benefits for other wildlife and habitats.
- The pupils could be asked to take notes from the video. After the video, there could be a class discussion about what the pupils learnt.

Slide 12 – Quiz

- Each pupil should be handed a copy of the in-class quiz and they should complete this on their own.
- At the end, the pupils will swap sheets and mark them together.
- Click to the next slide to display the answers.

Slide 13 – Recap

- Teacher to talk through the slide with the class.

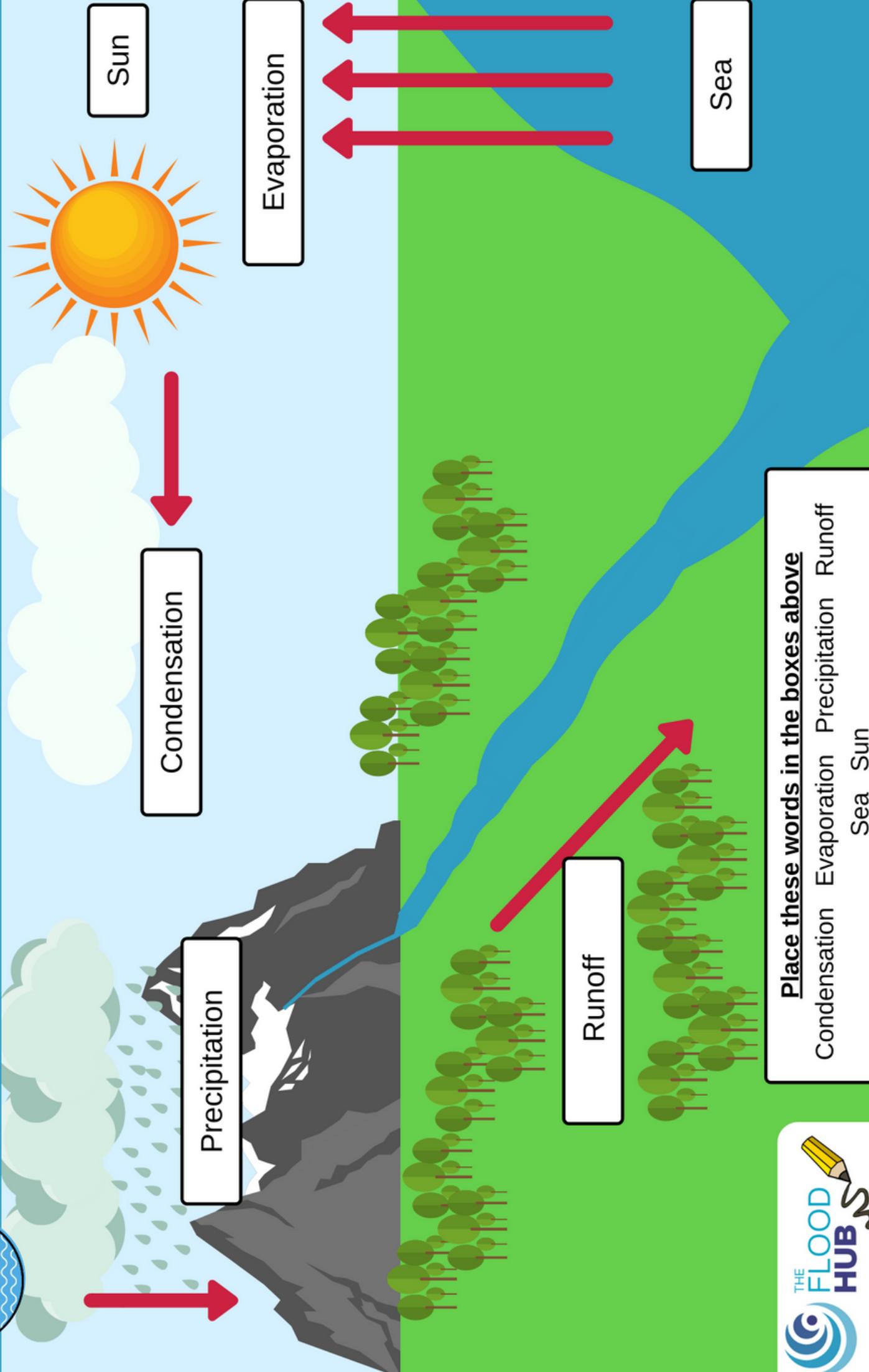
Slide 14 – Homework

- Choose a river located anywhere in the UK and research:
 - Where it starts (the source)?
 - Where it ends (the mouth)?
 - How long is it in miles/km?
- Write a paragraph about why the river is important. This can be about anything on or around the river e.g. a community, textile mill, tourist location, or an historical fact about it.
 - The homework can be based on any river in the world.
 - An example is the River Tyne and shipbuilding, or even the Thames and its role in commerce.
 - By finding out about why it is important, the reasons given may include some of the points discussed in the lesson. However, additional reasons such as transport, textiles etc may be given which will lead in nicely to the next lesson about why we live around rivers.

Slide 15 - Future learning

- The video on this slide explains what will be learnt in future lessons.

WORKSHEET: THE WATER CYCLE



Sun

Condensation

Precipitation

Evaporation

Runoff

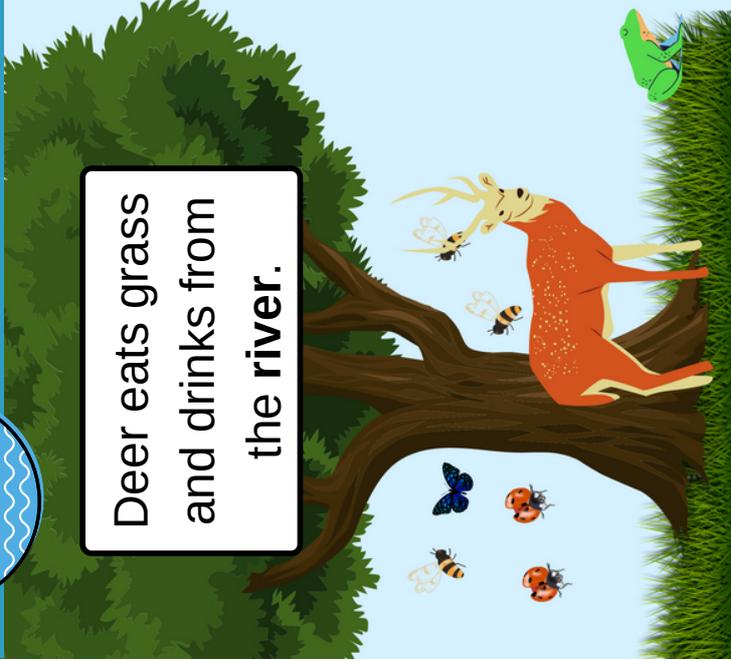
Sea

Place these words in the boxes above
Condensation Evaporation Precipitation Runoff
Sea Sun



WORKSHEET: BASIC RIVER ECOSYSTEM

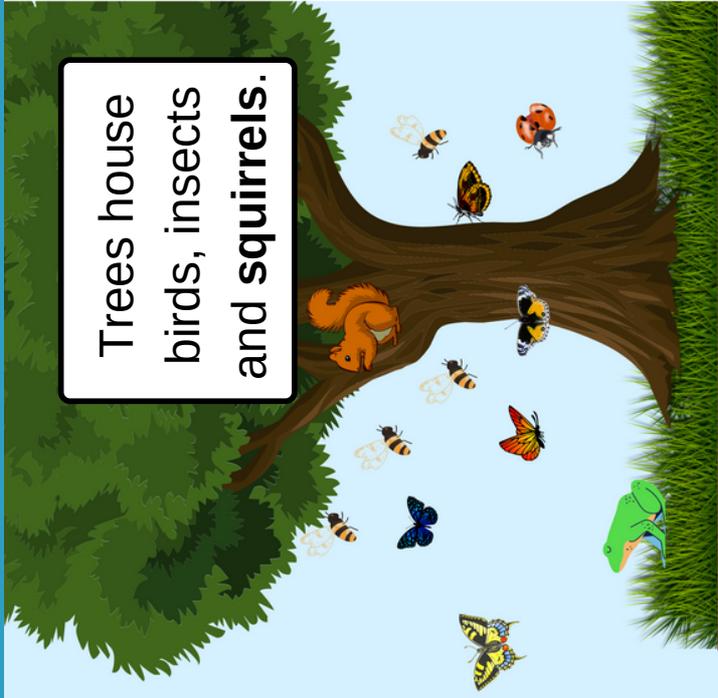
Deer eats grass and drinks from the **river**.



The ground absorbs **rainfall** and the grass and plants **grow**.

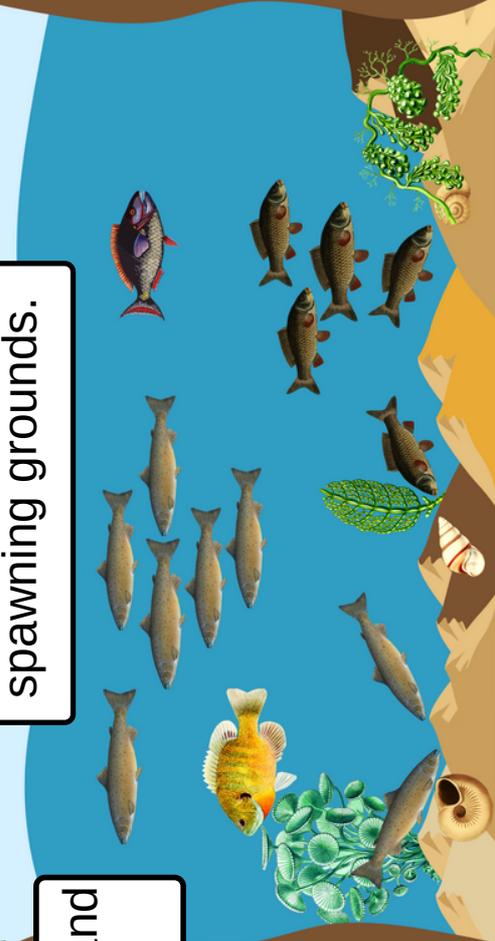
Insects **live** in the grass.

Frogs eat insects which live in the **grass**.



Trees house birds, insects and **squirrels**.

Fish lay eggs in spawning grounds.



Tree roots stabilise the river bank and help to reduce **erosion**.

Fish eat **plants** and smaller fish.

Place these words in the boxes above

Rainfall Erosion Live Grass
Fish Squirrels River Grow Plants



QUIZ: WHY RIVERS ARE IMPORTANT

Answer the following questions based on today's lesson.

1. Name 3 reasons why rivers are important? (The students can choose either of the following or another valid reason)

Their role in the water cycle, land drainage, ecosystems, for animals and their habitat.

2. What role do rivers play within the water cycle?

Drain land and take water from source back out to the sea.

3. What is the name given to the area in which all the rain that falls drains to the same river?

Catchment OR land drainage basin

4. River beds, banks and floodplains contain lots of nutrients and minerals. How do they get there?

They are collected from rocks and the land when surface water runs-off the land.

5. What is a river ecosystem?

A river ecosystem is the environment in which plants and animals all live together and rely on each other in order to survive.

6. How does a beaver help to reduce flood risk?

They build dams.