

rivers of the world

Education Pack

<https://schoolsonline.britishcouncil.org/classroom-resources/list/rivers-world>
<http://www.riversoftheworld.org>

Introduction

Rivers have a way of captivating people. Stand on the banks of one of the world's major rivers and you can still feel the wonder Wordsworth expressed over two hundred years ago, watching the Thames flow through London in the early morning. Rivers of the World, the flagship art and education project of the Thames Festival Trust delivered in partnership with the British Council, has been capturing this enthusiasm and inspiring pupils and teachers in countries across the world since 2006.

The project enables young people to explore and celebrate their local environment, learn about other cultures and engage with global issues. It also provides fantastic opportunities for pupils to work with talented professional artists to create amazing pieces of artwork for public display in London and other cities around the world.

This education resource pack extends the project's reach to a much greater number of schools and provides a wealth of exciting cross-curricular activities for pupils aged 7–14. It is designed to expand knowledge and understanding, help your pupils to develop core skills and encourage them to explore and reflect on local and global issues. It also contains examples of artwork from the project and illustrations of how schools around the world have used the resources with their students.



River Chao Phraya by Adrian Evans

Composed Upon Westminster Bridge, 1802

by William Wordsworth

*Earth has not anything to show more fair:
Dull would he be of soul who could pass by
A sight so touching in its majesty:
This City now doth, like a garment, wear
The beauty of the morning; silent, bare,
Ships, towers, domes, theatres, and temples lie
Open unto the fields, and to the sky;
All bright and glittering in the smokeless air.
Never did sun more beautifully steep
In his first splendour, valley, rock, or hill;
Ne'er saw I, never felt, a calm so deep!
The river glideth at his own sweet will:
Dear God! the very houses seem asleep;
And all that mighty heart is lying still!*

Contents



Pupils from Escola Carlitos, São Paulo

The pack is grouped around six themes and is designed to be flexible and adaptable for use in a variety of settings.

Each unit contains background information, ideas for discussion and suggestions for cross-curricular activities. There are learning objectives, lists of additional resources and references to the British Council's six core skills. The discussions and activities can be used as starting points in individual lessons or as elements of a larger cross-curricular joint project involving collaboration over a number of subjects, perhaps with a partner school overseas.

If you do not currently have a partner school but would like to find one and set up an online collaboration space to work together, further information can be found at <http://schoolsonline.britishcouncil.org/partner-with-a-school/finding-the-right-partner>.

However you use the materials, we hope you enjoy your exploration of Rivers of the World.

THEME 1 4–8

RIVER OF LIFE encourages schools to teach, think and talk about the features of rivers, learn outside the classroom, take part in fieldwork and explore habitats and wildlife found in and around rivers.

THEME 2 9–12

RIVER CITY explores ways of unlocking the history of cities by studying the development of their major rivers. It encourages pupils to look closely at their own and other river cities and the impact they have on the people who lived and worked there in the past and present.

THEME 3 13–15

WORKING RIVER focuses on how rivers continue to play an important role in the life of countries today and how developments beside them can trigger controversy and debate.

THEME 4 16–19

RESOURCEFUL RIVER emphasises the importance of rivers as vital resources fed by the water cycle, that need to be preserved for current and future generations.

THEME 5 20–23

POLLUTED RIVER looks at how our actions can damage the rivers we depend on and illustrates how schools can encourage their pupils to find ways to take action to help maintain this precious resource.

THEME 6 24–26

RIVER CULTURE explores how rivers have always provided inspiration for arts and culture and contains ideas to show how schools can inspire their pupils to continue that legacy in the 21st century.



River Thames by Barry Lewis

1

River of life

A river is a large, natural stream of flowing water. No two rivers are the same but they share certain features and go through similar stages on a journey from source to the sea. As it flows downhill pulled by gravity, a river shapes the landscape through erosion, transportation and deposition and sustains life by supplying food, water and habitats for animals and plants.

Rivers pass through three main stages called the upper, middle and lower courses, sometimes referred to as young, middle aged and old. From the source in the upper course, young rivers flow quickly, and as streams join together the volume of water increases. You may see features such as waterfalls and white water rapids at this stage. The middle course meanders more slowly through gently sloping ground, depositing mud and soil and becoming wider and deeper with floodplains. Finally, as the river approaches the sea, it becomes very wide and at its mouth, sea water mixes with the fresh river water.





Pupils from Escola da Comunidade, São Paulo
by Roberta Fortunato and Keila Alaver

Rivers of the World

Talk about rivers! Rivers are found on every continent. They can shape enormous landforms like the Grand Canyon and connect us to each other, to our past and to the world around us.

As an introduction, ask your class how many rivers of the world they can name. Which have they visited, paddled in or travelled on? Do they have any strong memories or connections with rivers? What do they know already about them and what would they like to find out?

Pass or roll an inflatable globe or soft ball around the group. When each child catches it, ask them to name a country and find its principal river on the globe or in an atlas. Alternatively, name a river and see if they can identify its country, continent and hemisphere, or try a quick true or false quiz.

Questions could include:

- the Amazon is the longest river in the world. True or false? False – the Nile is the longest river.
- the study of fresh water, rivers and lakes is called limnology. True.
- the highest waterfall is Niagara Falls. False – the highest waterfall is Angel Falls in Venezuela.
- in the UK, each person uses about 160 litres of water every day. True.
- rivers always flow south. False - four of the 10 longest rivers in the world flow north.

Show photographs and clips of rivers around the world and begin a river alphabet glossary by asking the class to list as many river names or words associated with rivers that they can think of beside each letter. This sheet can be added to throughout the topic and reviewed at the end as a measure of progress. Can they complete the entire alphabet with river words by the end of the project?

You can find information packs for nineteen of the world's major rivers from the Anacostia in the USA to the Yangtze in China by visiting: http://totallythames.org/education/project/rivers_of_the_world/resources.

Encourage your pupils to locate a number of these on a world map or Google Earth. Then divide them into small groups and ask them to choose one and create a large picture of its journey from source to mouth on the playground floor using chalk, magazine pictures and junk materials. Encourage each group to photograph the results and create an interesting fact file about their river. This should include the name, location and at least five fascinating facts to present to the rest of the class in interesting and innovative ways. They could teach a lesson, create a presentation, wiki page or spoof documentary film, or write an information book for younger children.



1

Explain to the class the key features and processes of a river system including the different courses of the river and processes of erosion, transportation and deposition. Useful resources for this can be found on the BBC website at: http://www.bbc.co.uk/schools/gcsebitesize/geography/water_rivers/river_landforms_rev1.shtml and in the additional resources section at the end of the pack.

Ask your pupils to work in groups to cut up and match the words and definitions on **Appendix 1** and then design and create three large murals or 3D models showing the major features of each section of a river with information recorded on labels or sound buttons. These could then be joined together to form a large picture or model of a river from source to mouth.

Encourage them to add any new words they come across to their vocabulary list.

British Council Ambassadors working with children from a number of schools in Wales introduced their rivers project by dividing the students into small groups and giving each group an envelope containing the name of a major river of the world. The students then used iPads for research to help them produce a mind map containing clues and interesting facts about their river for the other groups. The other groups then had to guess and locate the name of the river and country on a large world map. The students went on to carry out a number of activities that they went back to share with other pupils from their schools as Rivers of the World Ambassadors.

CURRICULUM LINKS:
Geography, ICT, English.

CORE SKILLS:
Critical thinking and problem solving, creativity and imagination, digital literacy, communication and collaboration, student leadership and personal development.

LEARNING OBJECTIVES
To stimulate interest in rivers of the world and learn about the key features of a river system.



Exploring your local river

Learning outside the classroom provides enormous benefits for pupils' education and can be one of the most memorable parts of their time at school. Why not enhance your study with a visit to your nearest river and carry out some of the following investigations.

Before the visit, discuss which part of the river you will be visiting and locate it using maps, aerial photographs or software such as Google Earth. Discuss water safety, what they might expect to see on their field trip and plot the route they will take to get there. You may be able to arrange a talk or workshop from a Ranger or local River Authority official and take a boat trip during your visit as well as carrying out activities. Do ensure that you take all expected precautions and complete the required risk assessments before you go.

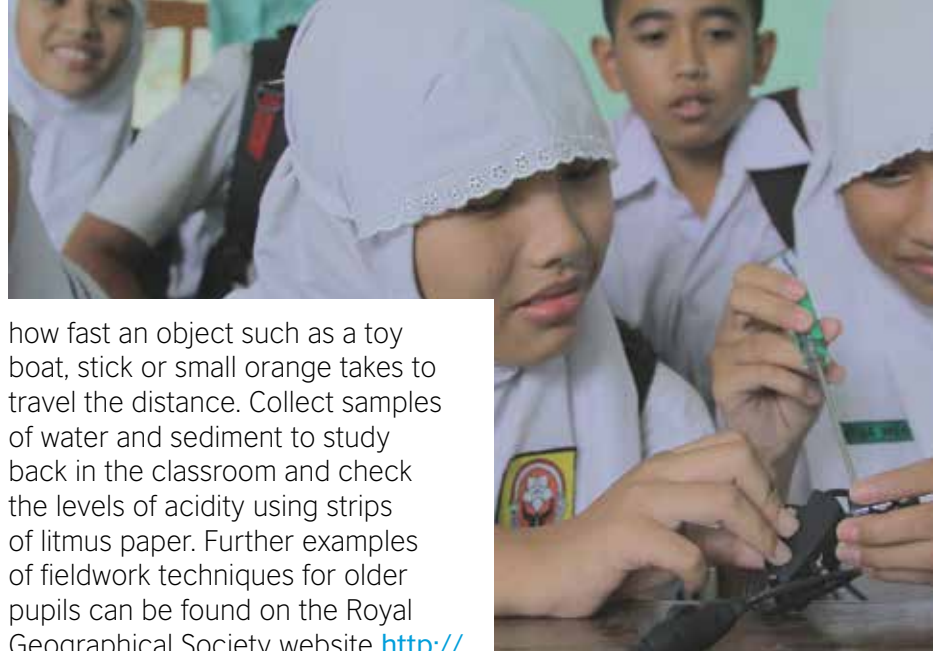
When they arrive, ask your pupils to record what they can see and hear. Is the river fast or slow flowing? What natural and man-made features can they spot? Does the water look clean or polluted? Look for evidence of erosion, deposition and other river features. Take notes and photographs, sketch sections using a cardboard viewfinder and perhaps organise a scavenger hunt where groups compete to collect a number of natural and man-made objects during a set period of time.

Record the weather conditions, temperature and humidity, and estimate the width and depth of the river. Take measurements of the size of pebbles, temperature of the water and speed of the river by measuring and marking out a distance of ten metres and timing

how fast an object such as a toy boat, stick or small orange takes to travel the distance. Collect samples of water and sediment to study back in the classroom and check the levels of acidity using strips of litmus paper. Further examples of fieldwork techniques for older pupils can be found on the Royal Geographical Society website <http://www.rgs.org/OurWork/Schools/Fieldwork+and+local+learning/Fieldwork+techniques/Rivers.htm>.

Rivers are also great places for spotting wildlife. Use sweep nets, pooters and magnifiers to explore the environment and hunt for bugs in different habitats by putting down hoops and counting the number and types of flora and fauna you see. If you are able to explore a shallow stretch safely, try using nets, buckets and trays to collect invertebrates and small fish. Draw the most interesting creature found, try and identify them using a key or give them imaginary names such as Long Legged Crawlysauros!

Back at school, make a record of your fieldwork, use sketches as a basis for art work such as collage and printing, and mount photographs in an exhibition in a virtual place such as the school website, or in a dedicated area in your school.



Pupils from SMP Muhammadiyah 7, Surakarta

CURRICULUM LINKS:
Geography, Maths, Art and design, Science.

CORE SKILLS:
Communication and collaboration, critical thinking and problem solving, digital literacy.

LEARNING OBJECTIVES:
To experience a river environment firsthand, carry out fieldwork investigations and present their findings.

Flora and fauna

Rivers and their banks provide homes for a wide variety of animals. Bring some examples of fish from the fishmonger's or local market into class for your pupils to examine closely and carefully. Ask them to make detailed drawings, identify features such as gills and note the patterns of markings on their skin. Discuss how they are able to breathe, balance, move, feed and survive in their natural environment. Teachers of older students may also decide to study fish anatomy through dissection to discover more about their internal organs. (Links to films of science lessons in Finland and the UK teaching this aspect of science can be found in the additional resources section.)

Discuss examples of different food chains that can be found in the world's rivers and investigate some of the amazing creatures that spend their lives in a river ecosystem. These could include anacondas, the world's biggest snake, Chinese river dolphins and spawning salmon who travel hundreds of miles from the ocean to the place where they were born. Discuss how these creatures have adapted to survive in their river environments and what dangers they face in today's world. How can we protect their fragile ecosystems?

To explore adaptation and evolution further, give groups of pupils different descriptions of a river habitat. These could include an Amazon mangrove swamp, a tidal estuary or the Nile Delta. Then provide each group with some clay or play dough and collage materials and challenge them to work together to design and make an imaginary creature that

has just been discovered in this ecosystem. They should give their creature a name and be able to describe how it will feed, move, and protect itself from predators in this ecosystem. Ask them to present their imaginary creature and its adaptations to the rest of the class and then go on to create reports, stories or animations about their creature and its life in the river.

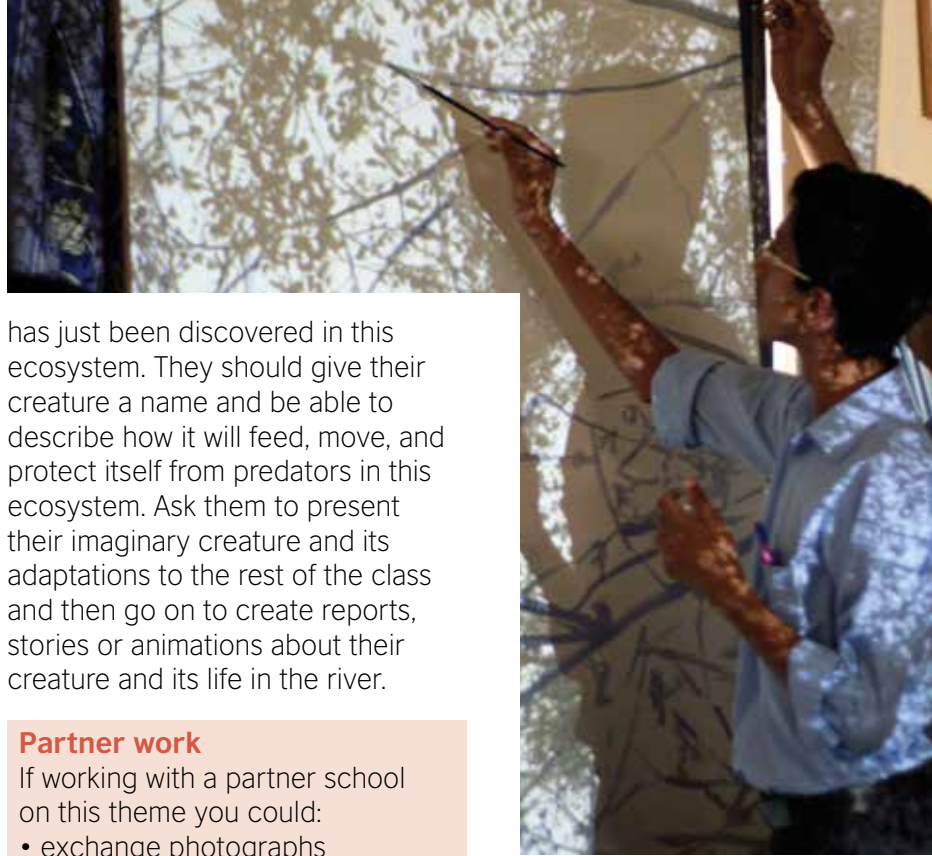
Partner work

If working with a partner school on this theme you could:

- exchange photographs of your playground maps, river murals or models
- share river fact files and artwork from your field trips
- interview your partner school about their fieldwork and compare findings from the two rivers
- find out about the wildlife living in your partner school's local river
- ask pupils what they enjoyed and found most challenging about working on this theme.

Useful resources for this theme:

- inflatable globe or atlases and maps
- access to the internet and digital cameras
- fieldwork materials such as magnifying glasses, pooters, nets, buckets
- clay or play dough, collage materials, large chalks.



Government High School Kala Gujran No. 1, Jhelum

CURRICULUM LINKS:
Geography, Science, Environmental studies.

CORE SKILLS:
Digital literacy, creativity and imagination, communication and collaboration, critical thinking and problem solving.

LEARNING OBJECTIVES:

To learn about different river ecosystems and how plants and animals adapt to life in the environments in which they live.

River City

River City Detectives

Many of the world's major cities have grown up along the banks or mouths of large rivers and the stories of these rivers reflect the histories of the cities themselves.

Discuss how your city and that of your partner school has grown over time. What was it like in the past? Why did people originally settle here? What were their houses like and why? How did they make their livelihoods from the river? What major historical events has it been a part of? How do we know?

Show your students old photographs, paintings or historical maps of the area and try to arrange interviews with local residents or museum staff who can tell you more about life in the city in the past. Census records of streets can also give an indication of occupations and conditions of people who lived alongside the river in the past. Contemporary non-fiction and fictional accounts can also provide valuable insights. In his book *London Labour* and the *London Poor*, the Victorian reformer Henry Mayhew describes how poor orphan children known as mudlarks waded in the mud of the Thames to find bits of coal iron and rope to sell at the rag shops. Charles Dickens also created fantastic descriptions of the Thames, its buildings and its characters in many of his novels, such as *Our Mutual Friend* and *Great Expectations*.

Encourage your pupils to find out how writers in the past portrayed life beside your river and then take them for a walk around your river city to record the sights and sounds of the city today. Use sketch books and digital cameras to record interesting details of buildings, signs, tourist attractions, bridges and shops. Record snippets of overheard conversations (even those from people on mobile phones) and interview residents about their lives today. What are the best and worst things about living beside the river?

After visiting and studying the history of your river city, ask your pupils to use their notes and images to make the area come to life in words and pictures by writing a vivid description about what makes their city unique and distinctive. These descriptions accompanied by the students' photographs and drawings could be compiled in a book or used to create a tourist brochure, blog or podcast about the city. This could be swapped with your partner school and sent to the appropriate city tourist agency for comment.

A school in Derry, Northern Ireland encouraged their students to take photographs of the Peace Bridge over the River Foyle, which links the two halves of the city and the Protestant and Catholic communities. They then used these photographs as inspiration for writing poetry, which was displayed with the photographs in a local art gallery.

2

One student wrote:

The Peace Bridge reminds us of serenity and hope.

The busy hub of the city surrounds the tranquil river as it flows

Peaceful, calm, flowers, splashes of colour,

Dappled, sketched, drawing the River God to the surface

Pure curved bridge sews and mends the rips from decades before.

Sketches and drawings could also be used as a basis for artwork in different media. Students from College Claude Chappe in Paris made paper cut-outs based on bridges and landmarks along the Seine, whilst pupils from their partner school Newstead Wood School in London based their cut-outs on the banquets and celebrations that took place in the first underwater tunnel under the Thames.

CURRICULUM LINKS:

History, English, ICT, Geography.

CORE SKILLS:

Creativity and imagination, communication and collaboration.

LEARNING OBJECTIVES:

To carry out research into the history of a river city and create a picture of life in the city today.

2

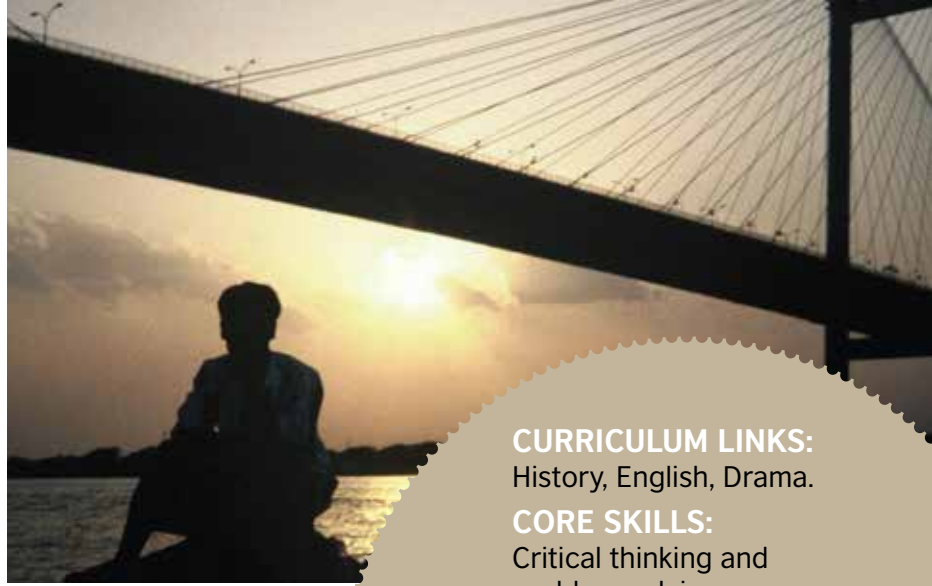
Amazing archaeologists!

Many sources of evidence about river cities in the past are unearthed by archaeologists identifying objects that have washed up on the banks of the river. A number of museums and trusts in different cities offer exploratory walks for schools along the foreshore to collect and identify historical artefacts. If that is not possible, why not recreate an archaeological dig by burying objects in large sand trays. Tell the class that they are archaeologists and precious artefacts that reveal important information about the history of their city are hidden in the sand. They will need to work together to choose appropriate methods and tools to uncover and identify these objects.

Having discovered and brushed clean their objects with paint brushes, ask them to use appropriate research tools and websites to find out more about their objects and discuss the following questions:

- What do you think the object is made from and what might it have been used for? Give your reasons.
- How old do you think it is?
- Who might it have belonged to and why was it in the river?
- How would you describe the object to someone who had never seen it before?

Make detailed drawings of your findings. If you have buried part of an object, ask the pupils to draw the fragments and decide what the completed object may have looked like and then present their conclusions to the rest of the class.



River Ganges by George Nicholson

CURRICULUM LINKS:
History, English, Drama.

CORE SKILLS:
Critical thinking and problem solving, communication and collaboration, digital literacy.

LEARNING OBJECTIVES:
To learn how archaeologists retrieve and study primary sources to gather evidence about the past.



Rivers of the World artwork exhibition in front of Tower Bridge, London by Kate Forde

2

Bridges and landmarks

Bridges are important features in many river cities. They can be beautiful as well as functional, and are often bound up with the history of the city. In Medieval and Tudor London they were even used to display the heads of traitors!

Show your class pictures of different types of bridge design such as an arch bridge and a suspension bridge. Include some famous examples such as the Sydney Harbour Bridge and the Golden Gate Bridge. If possible, visit a local bridge and discuss the design, shapes, materials and any decorative motifs that you can see.

Back in class, explain to your pupils how to make different types of effective joints such as T-joints, L-joints, columns and triangular joints, and then divide them into groups. Ask each group to come up with a name for a bridge company and then design and make a free standing bridge, using recycled materials such as garden canes, elastic bands, newspaper, card and tape, with the following criteria:

- The bridge has to span a gap of 30cm
- The bridge has to be able to support a weight (e.g. 50g or a toy car) in the middle
- The bridge has to be free standing
- The bridge needs to be aesthetically pleasing
- The group needs to demonstrate collaborative working and problem solving skills.

Impose a time limit in which the children can plan and construct their bridge. Once completed, test and evaluate their models against

the criteria before awarding a certificate to the best bridge design company. As a follow up activity you could also ask them to try constructing their bridges from spaghetti and marshmallows!

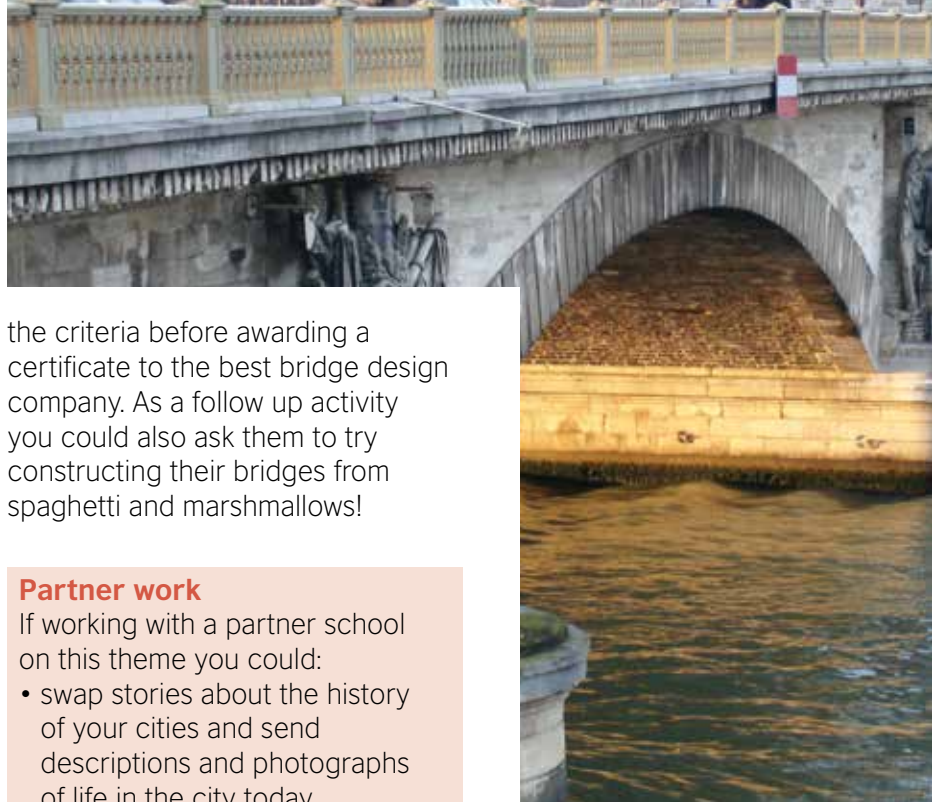
Partner work

If working with a partner school on this theme you could:

- swap stories about the history of your cities and send descriptions and photographs of life in the city today.
- make tourist brochures, blogs or films to provide information for visitors. Provide feedback on the most useful guides.
- exchange information about cities and bridges in each country.
- send photographs and descriptions of the most successful bridges built in class.

Useful resources for this theme:

- historical maps, photographs and other primary sources about your city
- access to the internet and digital cameras
- canes, elastic bands, newspapers, recycled material, spaghetti, marshmallows.



River Seine by Shona Watt

CURRICULUM LINKS:
History, Design and Technology.

CORE SKILLS:

Critical thinking and problem solving, communication and collaboration, creativity and imagination.

LEARNING OBJECTIVES:

To learn about different types of bridges and create a free standing bridge to span a distance and hold a weight.

Working River

Rivers that work for us

Throughout history, rivers have been used by mankind. The Ancient Egyptian civilisation flourished as the Nile allowed transport and trade, and the annual flooding turned desert into fertile land. Rivers continue to provide transportation routes, water for drinking and irrigating farmland and power for homes and industry. In the US, more than 50 cities rely on the Mississippi River for their daily water supply.

Organise pupils into small groups and ask them to think of as many ways as they can to use a river. Encourage them to look at the photographs in Appendix 2 and discuss how the rivers are being used in each one. Ask them to find the location of each river and add thought and speech bubbles to each photograph showing what the people might be thinking and saying to each other.

In the 1700s the River Thames was so busy that traffic could hardly move as ships queued along the banks to unload their cargo. This is very different today. Encourage pupils to carry out research to find out how their local river and that of their partner school has been used for trade and transport at different times. What goods were transported? Where did they come from and go to? Discuss how changes in technology have affected the ways in which the river is used and how it might be used 100 years from now.

CURRICULUM LINKS:

History, Geography, English, ICT.

CORE SKILLS:

Digital literacy, communication and collaboration.

LEARNING OBJECTIVES:

To learn about the changes in patterns of river use over time.

3

River debates

New developments that affect how rivers are used can be controversial. Ask your pupils to find out about recent examples such as the Three Gorges Dam project along the Yangtze River in China, the Belo Monte Dam in Brazil and the Grand Ethiopian Renaissance Dam in Ethiopia.. Encourage them to research the arguments both for and against these new developments.

Set up a role play debate where members of your class take on the roles of characters who will be affected by the building of a new factory or power plant beside your local river.

Roles could include owners of the new development, environmental activists, members of the media, unemployed local residents, shop owners, the local mayor and other members of the community.

Students should consider how their character may be affected if the new development goes ahead, and think of points to raise during the debate. Students should vote, in character, at the end of the session for whether the new scheme should go ahead, and evaluate which side produced the most robust arguments.



River Nile by Adrian Evans

CURRICULUM LINKS:
Geography, Drama, English.

CORE SKILLS:
Communication and collaboration, citizenship, student leadership and personal development.

LEARNING OBJECTIVES:
To learn about recent developments in the use of major rivers of the world and how river developments can be controversial.



The Bosphorus by Adrian Evans

3

River boats

Boats have always been central features of working rivers, providing housing, a form of transport for people and goods to move around the country and an enjoyable way of seeing the river.

Show examples of different types and styles of riverboats from around the world such as the wooden abras of the Dubai Creek, papyrus boats on the Blue Nile or the long-tail boats on the Chao Phraya in Bangkok. Discuss the materials used to make them and the local factors that have influenced their design and function.

Set up a series of investigations to explore different types of boat design. Using clay or play dough and a water tank, ask your pupils to find out which shaped hull floats the best, and then make a boat from recycled materials. They could then go on to plan an investigation to find out which type of power will be best for their boat.

They could use sails, experiment with wind-up elastic bands or motors. As an extension activity, set up a competition to design the most innovative system using an electrical circuit to be safe at night or warn boats when they are approaching rocks.



River Papaloapan by Adrian Evans

Partner work

If working with a partner school on this theme you could:

- find out about the trade and transport on your partner school's local river.
- swap information about the types of boat commonly used on their river. What factors have influenced their design?
- exchange photographs of your boat designs and find out which type of boat was the most successful – how far did they travel?

Useful resources for this theme include:

- access to the internet and reference materials
- recycled materials, elastic bands, water source
- batteries, bulbs, wires and connectors
- digital cameras.

CURRICULUM LINKS:

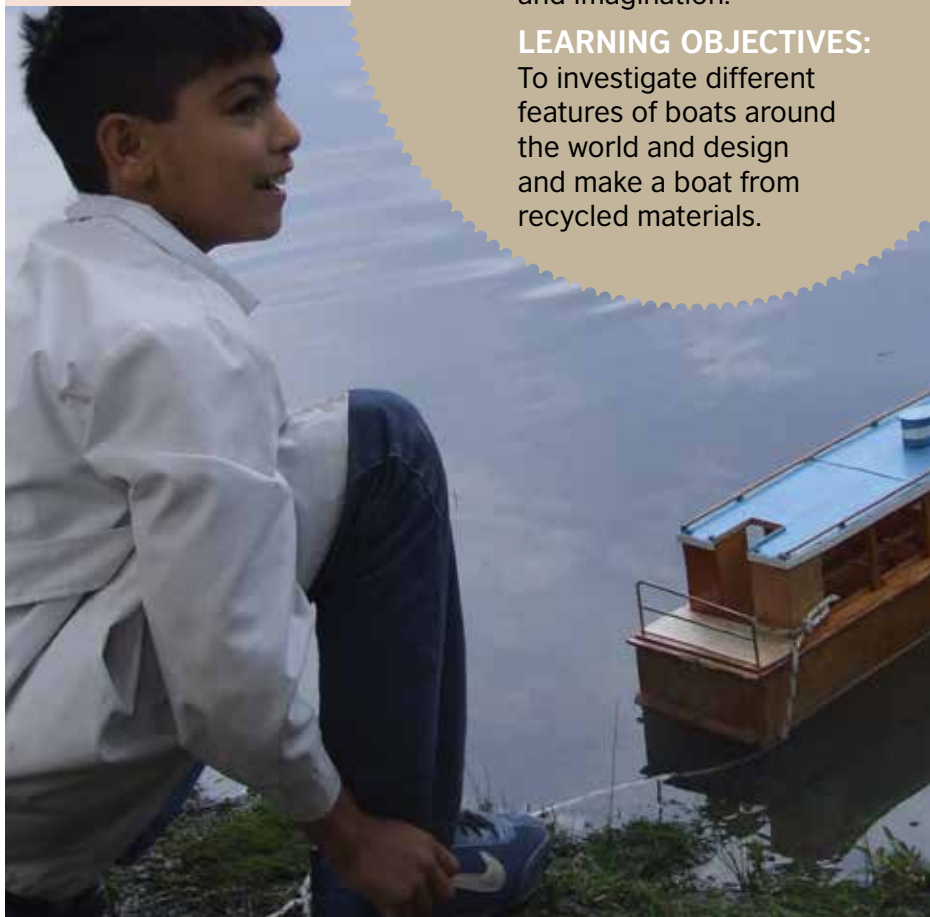
Geography, Design and Technology.

CORE SKILLS:

Critical thinking and problem solving, communication and collaboration, creativity and imagination.

LEARNING OBJECTIVES:

To investigate different features of boats around the world and design and make a boat from recycled materials.



Pupil from Secundaria Basica No 46 Tigre, Buenos Aires

Resourceful River

Water is so much a part of our daily lives that we sometimes take it for granted. Where does this water come from and how can it be that this is the same water that was here before humankind evolved? The answer is the water cycle, which is essential for making sure rain falls around the world and rivers start to form.

Warmth from the sun causes water to evaporate from seas and rivers. As the water vapour rises it cools and forms clouds. Tiny droplets of water fall as rain or snow and collect in rivers. The rivers flow to the sea and the process starts all over again. More information, including a water cycle animation and an experiment to create a water cycle in a bag, are available at the Met Office website: <http://www.metoffice.gov.uk/learning/weather-for-kids/water-cycle>.

Explain the formation of the water cycle and its importance to life on earth. Give your pupils copies of the slide in Appendix 3, created by a student to illustrate the water cycle. Ask them to add simple labels and a short explanation to demonstrate their understanding.

CURRICULUM LINKS:

Science, Geography, English, ICT.

CORE SKILLS:

Critical thinking and problem solving.

LEARNING OBJECTIVES:

To learn about the importance of the water cycle and its involvement in the formation of rivers.

4

Every drop counts

Show your pupils a picture of a dripping tap. Discuss what is happening in the picture. Why is it a problem? A tap that drips once every 10 seconds will waste about 315 litres of water in a year – that's about two large bathtubs full of water.

Ask your students to keep a log of the amount of water they use each day and create a database of the amount used by the class in a day, a week and a year. How much would this be across the school? Discuss how they could use less water by making small adjustments to their routines - turning the tap off when cleaning their teeth (this could save four litres a day) or showering for less time.

Invite them to use a storyboard grid to create a short comic strip to persuade younger children to save water. Perhaps they could invent a superhero figure as the hero or heroine to drive their message home.

In parts of the world where people cannot turn on a tap to get fresh water, they may have to walk long distances to collect water several times a day. This situation is likely to worsen with climate change, so every drop of water counts. Share with your pupils the poem *Woman's World* by Barolong Seboni, from Botswana, in Appendix 4.

Discuss how the layout of the text and the illustrations by Jan Pienkowski contribute to the theme of the poem? Ask pupils to write their own shape poem, based on the idea that every drop of water counts using shapes that match the message of the poem.

Washing in the Hooghly by Kate Forde



CURRICULUM LINKS:
English, Citizenship, Geography.

CORE SKILLS:
Communication and collaboration, creativity and imagination, citizenship, personal development and student leadership.

LEARNING OBJECTIVES:
To investigate the importance of conserving water.



Rio de la Plata by Adrian Evans

4

Floods

Floods occur when water, mud and debris spill over river banks after prolonged or heavy rain, or when there have been changes to the natural landscape. This can make land fertile but can also cause disasters with loss of life and major problems such as contaminated drinking water, the destruction of homes and habitats and the spread of waterborne diseases.

Climate change is likely to exacerbate the frequency of floods as sea levels rise and rainfall is heavier in some areas. Some areas such as Northern Europe and wet tropical areas are predicted to become 40% wetter.

Discuss with your class why some places are more susceptible to flooding than others. How might human actions make flooding more frequent or severe?

Divide your pupils into groups and ask them to carry out research about a particular country or area that has been severely affected by floods in recent years. Mark the locations on maps and if possible view images of the locality on Google Earth. Ask each group to find out about the causes of the floods in this location and the effect that flooding has had on people's lives and the environment. Have any precautions been taken to prevent this happening again? Encourage each group to create a fact file with maps and images detailing the location, date, causes, effects and responses and report their findings back to the rest of the class.

Be prepared

Sudden flooding can happen in almost any area. Being prepared can help to reduce stress and avoid loss of life. Many areas in different countries have their own plans about what to do when floods occur and have drills to practice their responses.

In India, floods from monsoon rains increasingly affect village schools near the Brahmaputra River in Assam in June and September as glaciers melt in the Himalayas. After a devastating flood in 2004, the community has planted trees to protect buildings and created raised platforms to store possessions. In school, pupils now practice what to do in a flood emergency, learn first aid, how to make rafts from banana plants, bamboo and tarpaulin and life jackets from bottles and jerry cans. They also learn from the elders in the village how to spot warning signs that a flood is coming from cloud patterns and the behaviour of animals and birds.



Pupils from Jungwon Middle School, Seoul

4

Ask your pupils to find out if your local area has an emergency flood plan. Encourage them to create leaflets or posters advising others in their community what to do if a flood should happen in order to stay safe.

When these natural disasters occur, agencies and charities such as UNICEF and Oxfam provide help to the people affected. Perhaps your students could organise a fundraising event for one of these organisations, highlighting the flood relief work that has been carried out.

Some countries, such as Bangladesh, have a lot of rain at certain times of the year and this causes flooding.

If land used to grow crops gets flooded on a regular basis, then this can contribute to food shortages.

The following activity from the Commonwealth Class and Royal Society classroom resource on global food security highlights one solution to the problem. This is the production of floating gardens. These are rafts made of natural resources; normally water hyacinth, soil and cow dung. Crops are grown on the rafts, which then float when flooding occurs.

Equipment:

- plastic drinks bottles
- small food trays
- straws
- string
- card
- yoghurt cartons
- plant material (e.g. vines)
- soil
- lollipop sticks or similar wooden sticks
- scissors, tape and glue.

Instructions:

Design and build a small floating garden. It must float on water in a sink or washing up bowl and be capable of growing seeds on top. Gardens should ideally have a way of being recycled once they are no longer useful.

You will need to think about the following in your design:

- Are the materials readily available?
- How might you dispose of the raft when it can no longer be used? Can it be recycled or used for compost?
- What size should it be and how well does it float?

Extension: try growing plants on top of your floating garden.

Partner work

If working with a partner on this theme you could:

- exchange ways to conserve water and ideas for superheroes and comic strips
- share your shape poems
- organise a joint event to raise money for a charity
- find out what measures are taken to prevent flooding in your partner school's locality
- swap photographs of your floating gardens.

Useful resources for this theme:

Useful resources for this theme:

- access to the internet and reference materials
- copies of storyboard and poem
- materials from charities and NGOs about aid provided to flood victims.

Polluted River

Sadly, rivers around the world are often polluted by waste from homes, industries, farms and boats as sewage, rubbish, chemicals and factory waste are deliberately or accidentally released into them. This can kill animals and plants and makes the water too dirty for people to use further downstream.

Can your pupils find news stories of rivers that have been affected by pollution? Discuss the effects this can have on both people and wildlife.

CURRICULUM LINKS:

Geography, Citizenship, Science, English.

CORE SKILLS:

Communication and collaboration, citizenship, critical thinking and problem solving, creativity and imagination, personal development and student leadership.

LEARNING OBJECTIVES:

To investigate the causes and consequences of river pollution and issues concerning access to clean water.

5

Show your pupils some of the sections on polluted rivers from the Rivers of the World resources at: http://thamesfestival.org/education/project/rivers_of_the_world/resources

or film clips such as:

<https://www.youtube.com/watch?v=PnrNQO1jBuk>

to see how some of the major rivers of the world have been affected by pollution.

One cause of pollution in some countries is plastic bags, which find their way into rivers. Ask your pupils to devise a campaign to reduce the number of plastic bags in circulation if this is an issue in your country. Perhaps they could create pamphlets warning of the dangers to wildlife, and design and make reusable bags as alternatives. There may also be opportunities to involve them with local organisations undertaking voluntary conservation work to tackle environmental problems on your local river.

Dinosaurs and All that Rubbish by Michael Foreman is a popular illustrated environmental tale which teaches young children how important it is to look after the Earth's resources. Find out about other similar cautionary tales from different cultures. Ask your pupils to work together and produce their own imaginative picture book that warns about the dangers of not looking after our rivers and share these with younger children within the school.

When Kokebe Tsibah School in Ethiopia were working on their Rivers of the World project they discussed how every piece of rubbish in their local river comes from somebody's hand and tells a story. They discussed how the variety of pieces of rubbish could mix together, react with each other and create new organisms. They wondered if

these 'Monsters of Kebena' could rise up and be a threat to their city! To make their artwork the students used waste materials and paint to create many 'Monsters of Kebena'. They wrote their monsters' stories in Amharic using different colours to reflect how the river can be a rainbow of colours due to pollution.

The United Nations maintains that there are still 780 million people around the world who do not have access to clean water. Ask your students to find out about the reasons that lie behind these statistics and the work of charities and NGOs like Water Aid, which campaign for clean water around the world.

At the United Nations Sustainable Development Summit in 2015, 193 world leaders committed to the Sustainable Development Goals (or SDGs) to help make the world safer, fairer and more just for everyone. There are 17 global goals with specific targets, which aim to tackle extreme poverty, fight inequality and injustice and protect the planet. Goal 6 is to 'ensure availability and sustainable management of water and sanitation for all'. Ask your pupils to design posters or make a short film to highlight the importance of this goal to provide access to clean water for all by 2030.

River Anacostia by Adrian Evans



5

Cleaning water

Present the class with a beaker of dirty water containing pebbles, sand, twigs, soil, along with a box containing the following items:

- a large plastic bottle
- string
- scissors
- gravel
- sand
- beakers
- different types of paper
- cloths
- a funnel
- elastic bands
- insulating tape
- charcoal.

Challenge the students to see if they can use the materials in the box to make the water cleaner. They must decide how to clean the water and which order to carry out the procedures. (It may look cleaner but make sure they do not drink it!)

Can they find out where their drinking water comes from and how it is made clean enough to drink?



Pupils from Sinseo Middle School, Seoul

Partner work

If working with a partner school on this theme you could:

- exchange copies of your children's stories, pamphlets, posters or films
- find out about their campaign to reduce pollution in their river.

Useful resources for this theme:

- copy of *Dinosaurs and all the Rubbish*
- access to the internet and digital cameras
- jar of muddy water and access to materials to make a filter.

CURRICULUM LINKS:
Geography, Science.

CORE SKILLS:
Critical thinking and problem solving, communication and collaboration.

LEARNING OBJECTIVES:
To set up an investigation into methods of water filtration.

5

In Ethiopia, Bethlehem school developed core skills in critical thinking, creativity and citizenship whilst studying the Kechene River for their Rivers of the World project. The river runs through the capital city, feeding the reservoir, which supplies Addis Ababa and is polluted by industries including battery and paint factories and tanneries. The students considered what living things the river feeds and what problems the pollution causes. On its journey it irrigates vegetable crops, which supply the markets of Addis Ababa. The students wanted to express the idea that the people of Addis Ababa are what they eat - the fruit and

vegetables irrigated and polluted by the Kechene. Inspired by Italian artist Giuseppe Arcimboldo who paints portraits made of vegetables, the students worked collaboratively to create an emotive image of a sickened man from sculptures of vegetables made with leather, metal, paint and waste materials.

Reflecting on the project, one student commented, "I know now that vegetables must not be polluted and we must protect and care for our rivers."



Art work by Bethlehem Secondary School, Addis Ababa, Ethiopia

River Culture

Rivers have always played an important part in the world's cultures and traditions. The Ancient Egyptians worshipped Hapi, the god of the Nile, and the Ancient Greeks believed five rivers circled the underworld, Hades. Rivers have inspired numerous great writers and artists across the world and continue to influence writers, artists and thinkers today.



Rivers of imagination

The first Prime Minister of India, Jawaharlal Nehru, described the cultural importance of the River Ganges to the people of India in the following way: “The river of India, beloved of her people, round which are intertwined her memories, her hopes and fears, her songs of triumph, her victories and her defeats. She has been a symbol of India’s age-long culture and civilization, ever changing, ever flowing, and yet ever the same Ganga.”

Organise pupils into groups to research cultural traditions associated with rivers from a variety of countries and cultures. Subjects might include weddings and funerals in India, dragon boat racing in China, or candle-laden floats for the festival of Loi Krathong in Thailand. Ask each group to create a presentation or class book about their research.

Share a selection of river stories, songs and poems from different countries. Discuss the images used by writers to paint vivid pictures in words and ask the class to pick out their favourite lines associated with rivers. When starting their projects on Rivers of the World, a group of Bangladeshi teachers performed a well-known song about Bangladeshi rivers called *Ei Padma Ei Meghna*.

Ask your students to combine their own favourite phrases and descriptions with pictures and colours from magazines to create a collage of words and images that celebrate rivers in literature and culture.

In Wales, pupils worked with storyteller Glyn Scott to dramatise *The Journey* – an original story about the formation of a river from source to the sea. You can see a copy of this story in Appendix 5 They created masks for the sprites and rock faces and improvised dialogue. When the sprites confronted the rocks they pushed their hands forward and stamped their feet, while the rock faces held out their arms in defiance.

Creative writing

Bring in a bottle with a message hidden inside. Tell the class that it was washed up on the shore of the river and has an important message hidden inside. Ask the class to discuss in pairs who sent it and why. They could then use these discussions to plan and write their own river mystery stories. These could be swapped with your partner school and illustrated by them.

Many artists from different times and cultures have created works depicting rivers. If possible, try and visit a gallery or invite a local artist into school to talk about their work. For inspiration, take a look at online gallery sites, such as the website for the National Gallery’s *Take One Picture* scheme:

<http://www.takeonepicture.org/exhibition/2009/index.html>.



CURRICULUM LINKS:

English, Art and Design, Music, ICT.

CORE SKILLS:

Creativity and imagination, digital literacy, communication and collaboration, citizenship, student leadership and personal development.

LEARNING OBJECTIVES:

To investigate the cultural significance of rivers and take inspiration from the work of authors, poets and artists to create artistic responses to the themes of rivers of the world.

This scheme invites schools to use a painting from the Gallery's collection as a stimulus for learning across the curriculum. Of particular interest are the pieces based on rivers such as Turner's *The Fighting Temeraire* showing a famous gunship being towed up the Thames, and *Bathers at Asnières* by Seurat of young men swimming and relaxing on the banks of the Seine. Encourage students to look closely at the images and the different ways that schools have interpreted them.

Your students could use a variety of techniques such as painting and drawing or metal embossing, lino printing and recycled collage to create individual pieces inspired by one of the Rivers of the World themes. These can then be joined together to create large collaborative pieces for display like those in the Rivers of the World catalogue at: http://thamesfestival.org/education/project/rivers_of_the_world/catalogues.

Encourage your students to listen to songs and music associated with rivers such as *River Moldau* by Smetana or Handel's *Water Music* whilst making their creative pieces.

Exchange information and final results with your partner school if you have one, and help your students to display their work at an exhibition in school, online or at another venue such as your local library, town hall or gallery. Encourage them to organise the event themselves - writing explanations of how the art was produced, making refreshments, creating a music playlist and acting as curators at the event. They could also create products such as cards, calendars or mouse mats of their art works, which could be sold to raise funds to support charities helping flood victims.

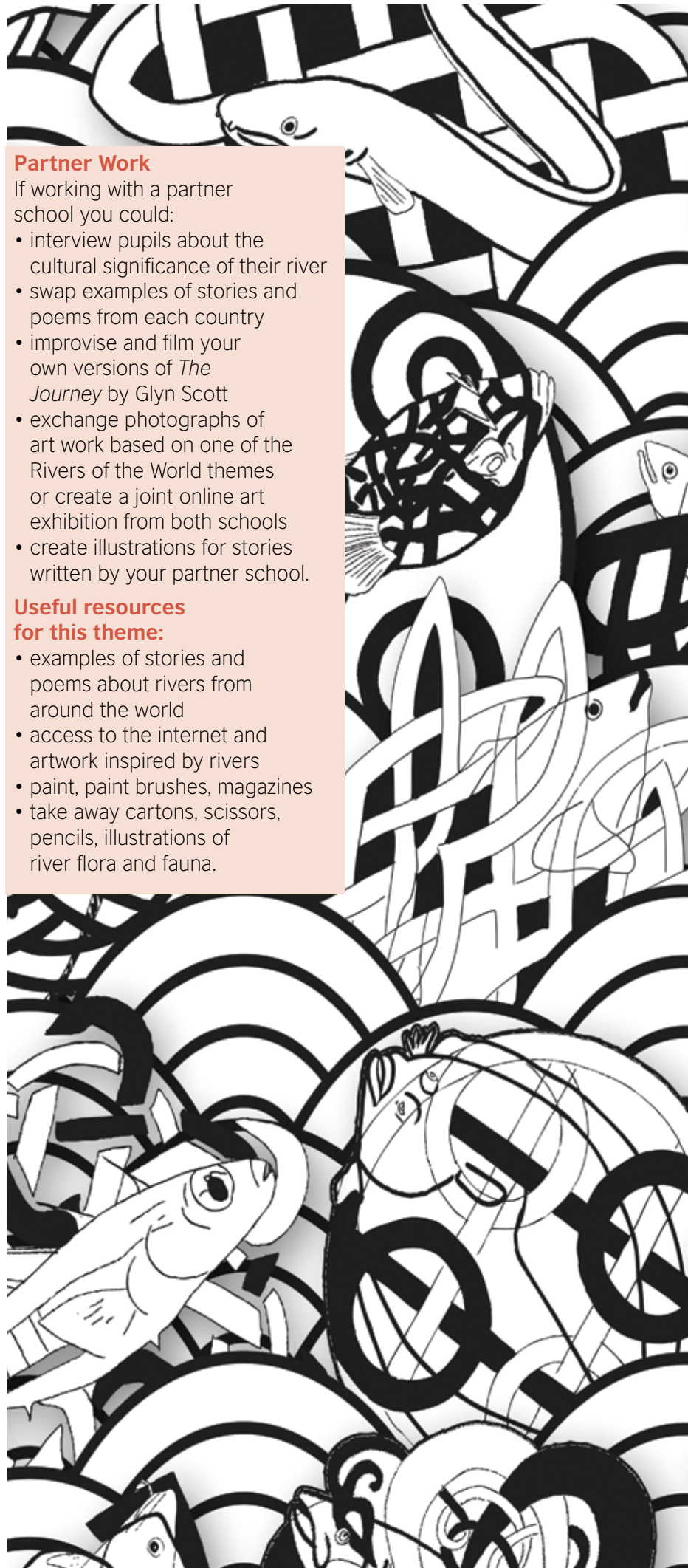
Partner Work

If working with a partner school you could:

- interview pupils about the cultural significance of their river
- swap examples of stories and poems from each country
- improvise and film your own versions of *The Journey* by Glyn Scott
- exchange photographs of art work based on one of the Rivers of the World themes or create a joint online art exhibition from both schools
- create illustrations for stories written by your partner school.

Useful resources for this theme:

- examples of stories and poems about rivers from around the world
- access to the internet and artwork inspired by rivers
- paint, paint brushes, magazines
- take away cartons, scissors, pencils, illustrations of river flora and fauna.




Appendices

Appendix 1

Copy on to card

Cut up the river vocabulary and place with its correct definition

 source	A fan-shaped area of land that builds up where a river enters the sea
erosion	Flat land either side of a river made of deposited material
deposition	This occurs when a river bursts its banks
tributaries	The wide mouth of the river where fresh water meets the sea
meander	Wearing away and removal of land by a river
mouth	The place where a river starts
delta	Small streams that join together to make a larger river
floodplain	This occurs when a river drops the material it is carrying

Appendices

Appendix 2



River Thames by Barry Lewis



River Surma by Shona Watt



River Surma by Shona Watt

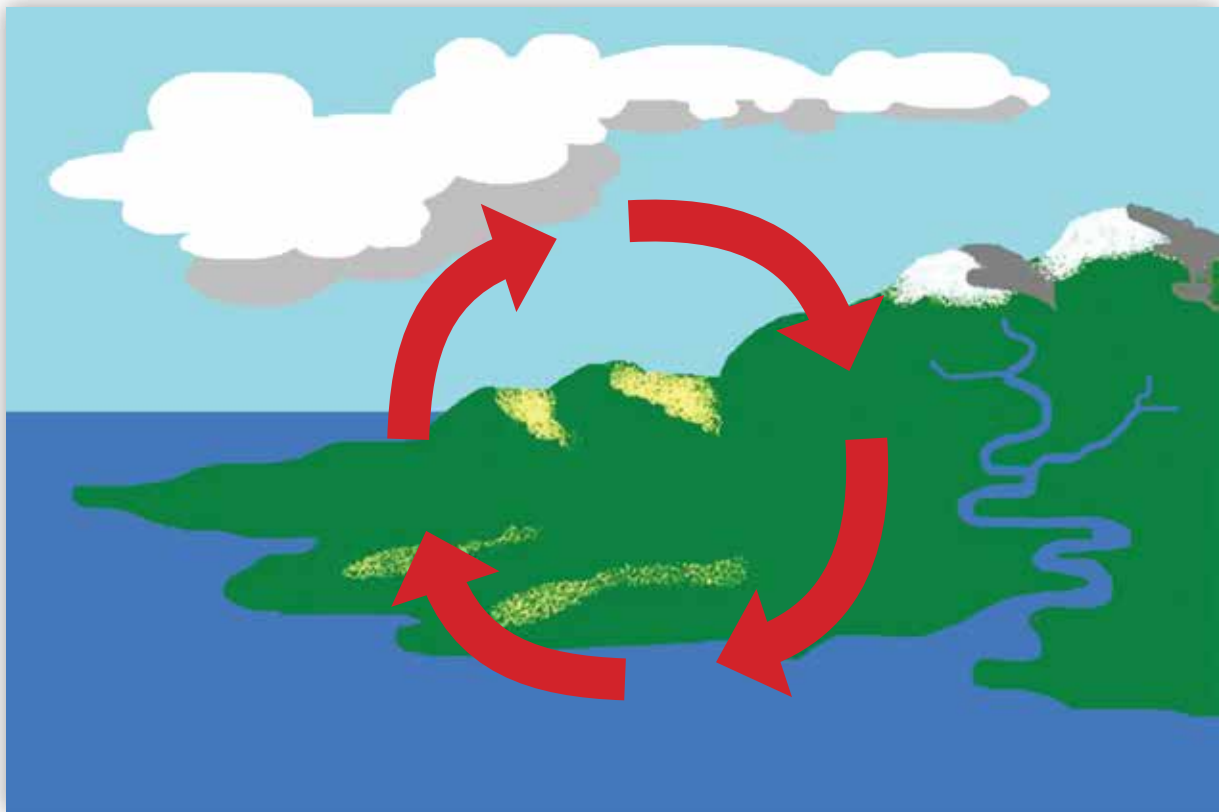


River Hooghly by Adrian Evans

Appendices

Appendix 3

My Picture of the Water Cycle by Beth



Appendices

Appendix 4

Woman's World by Barolong Seboni – a poem from Botswana which is taken from *A River of Stories: Tales and Poems from the Commonwealth* (www.ariverofstories.com) © Jan Pienkowski



Appendices

Appendix 5

THE JOURNEY by Glyn Scott

In the ancient times when the earth was new and still cooking, the heavens did their part. The rains fell, and fell, flooding the earth. The water searched every path to find a place to settle. Some lay down in wide open spaces and like the old woman nestled into the comfort of the valley, thus oceans and seas were created. Some wished to wander like the snake twisting and writhing through the land as rivers. Some chose to hide away and creep deep down into mother earth into the darkness to sleep.

But the heavens continued to open their mighty hands and rage down upon the land. Many rain brothers and sisters crept beneath the earth filling the spaces and wells.

And thus it was that a water sprite found itself forced into the light escaping through mother earth to the land above. The sprite felt lost and lonely. Not knowing this was the start of a journey. **(source)**

“I must go to where my brothers and sisters lie” said the sprite looking down from the mountain; it saw there in the distance a vast expanse of water, blue and sparkling, as if beckoning the sprite to join its rolling mass.

The sprite felt enticed and smiled. The journey would be daunting but

“It will be a great adventure”.

Jumping onto the land the sprite began to race down the steep sides of the mountain, cutting a path through the land and occasionally falling free from the high cliff to land far below into the soft wet earth. **(Waterfall)** Resting only for a moment the sprite continued on until the path ahead drew to a dark foreboding place with high walls on both sides. The sprite became afraid. It was cold, and the sprite began to shiver and found its path blocked.

“Who goes there and disturbs my slumber?” asked the wall of rock unmoving in front of the sprite.

“I must continue on to my brothers and sisters”
said the sprite “please let me pass”

But the rock was cold and hard and had no heart. The sprite could go no further and circled around and around for many days.

It was early one morning when a voice behind the sprite seemed familiar, “I seek to join my brothers and sisters too”
The fellow sprite was bigger and stronger than the little sprite.
Soon they were joined by another sprite **(tributaries)**

“Together we may defeat the heartless rock” and the friends set about their task of passing the great boulder. They used the steep drop to help them race towards the boulder. A great battle ensued for many years and eventually the rock gave way and the friends raced onwards **(erosion)**

Tired from their great fight the friends sought a gentler path. They began to twist and turn like the snake **(meander)** “We must not rest” said the little sprite “we must journey on to the ocean, it is our quest” So the friends found a steeper path. They raced over cliff tops and raged loudly as they passed. **(Even bigger waterfalls and rapids)**

They continued on at the speed of the wind in their steep descent. The way narrowed as once again the walls of a great canyon ran beside them. As they turned a corner a high rock face, darker and more foreboding than the previous wall confronted them. The sprites asked the wall to part and let them pass.

“Never” said the wall “You will not pass, be gone”

The sprites attacked as they had before but there was no breaking the wall. They were joined by many more sprites but fight as they might the rock stood firm. They settled down and swirled around and around wondering how they could reach the mighty ocean.

“Why do we not go around the great wall where the rock is softer” said the sprite and so they bent and twisted their way continuing on their journey. The friends were now mighty in number and spread out wide across the flattening land. **(floodplain)**

“We are so tired after our hard journey, let us slow down and meander along enjoying the countryside watering the precious land of mother earth and feeding the great trees to make them tall and strong” They gently cut their way through the soft earth creating a long and winding path.

Soon they could see the ocean swirling and beckoning them on. As they got closer to their goal the friends spread out and like fingers grasping and stretching, they spread across the land like a giant fan opening out against the strong rays of the sun. **(delta)**

The small sprite remembered how it had started its journey and looked back at the mountain and the hard path they had created.

“My journey is over, I must join my brothers and sisters to journey far and wide across the world” “Let others come after me and forge their own path.” **(mouth)**

And so it was and forever will be that water sprites across the world journey to the sea providing support and God given water to feed the lands and support for the peoples of those lands, providing homes for those who wish to live and work upon the water.

Find out more

We hope you have enjoyed using the materials in this pack. The following resources contain additional information that may help you to plan your curriculum projects:

- The Thames Festival website has a wide range of resources about rivers at: http://totallythames.org/education/project/rivers_of_the_world/resources. This link contains information packs on 19 major rivers of the world
- www.britishcouncil.org/sch-ne Schools Online has information about a number of joint curriculum projects that can be undertaken with your partner school
- <http://nationalgeographic.org/encyclopedia/> This National Geographic website contains a wealth of information about rivers
- <https://schoolsonline.britishcouncil.org/develop-your-skills/professional-development-courses/teaching-the-core-skills> This is a link to the British Council's Connecting Classrooms Global Citizenship themes, skills and outlooks
- <https://www.teachingchannel.org/videos/high-performance-in-science> shows a school in Finland teaching fish dissection as part of a series of lessons about river ecosystems
- <http://www.ariverofstories.com/> contains information about A River of Stories – tales and poems from the Commonwealth and other related curriculum materials
- www.unicef.org
- <http://geographical.co.uk/> The Geographical Association has a number of case studies and resources connected to rivers
- *Geography: learning to make a world of difference* (Ofsted 2011) is the latest report from UK inspectors about the teaching of geography
- Maps of different places in the UK can be seen here <https://www.ordnancesurvey.co.uk/opendata/viewer/> has a range of classroom resources to help you explore rivers
- <http://www.thames-explorer.org.uk/> WaterAid works in 27 countries worldwide, transforming millions of lives every year with safe water, sanitation and hygiene projects. See also <http://www.wateraid.org/uk/~media/Files/UK/Schools/secondarytheworkofwateraid.ashx>
- *Teaching Geography Creatively*, edited by Stephen Scoffham contains a range of practical ideas to inspire creative geography teaching
- http://www.bbc.co.uk/schools/riversandcoasts/water_cycle/rivers/index.shtml has information about rivers and the water cycle
- <http://environment.nationalgeographic.com/environment/freshwater/water-conservation-tips/> Water-saving tips from National Geographic.

Examples of stories and poems that celebrate rivers include:

- *Composed Upon Westminster Bridge* by William Wordsworth
- *A River of Stories Tales and Poems from the Commonwealth* compiled by Alice Curry
- *Rivers* by Valerie Bloom
- *The Adventures of Tom Sawyer and Huckleberry Finn* by Mark Twain
- *Just So Stories* by Rudyard Kipling
- *Journey to the River Sea* by Eva Ibbotson
- *Our Mutual Friend, David Copperfield and Great Expectations* by Charles Dickens
- *Tales of the River Bank* by Kenneth Graham
- Henry Mayhew's *London Labour and the London Poor* contains interviews with the poor living in Victorian England, including children who worked as mudlarks in the river
- *Dinosaurs and All That Rubbish* by Michael Foreman.

Famous paintings of rivers include:

- *Starry Night on the Rhone* by Van Gogh
- *Charing Cross Bridge* by Monet
- *Bathers at Asnières* by Seurat
- *The City Seen Through the Arch of Westminster Bridge* by Canaletto.

rivers of the world



Rivers of the World Education Pack produced by Alison Willmott
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